Vol. 889 Number 4

OFFICIAL GAZETTE

of the
UNITED STATES PATENT OFFICE

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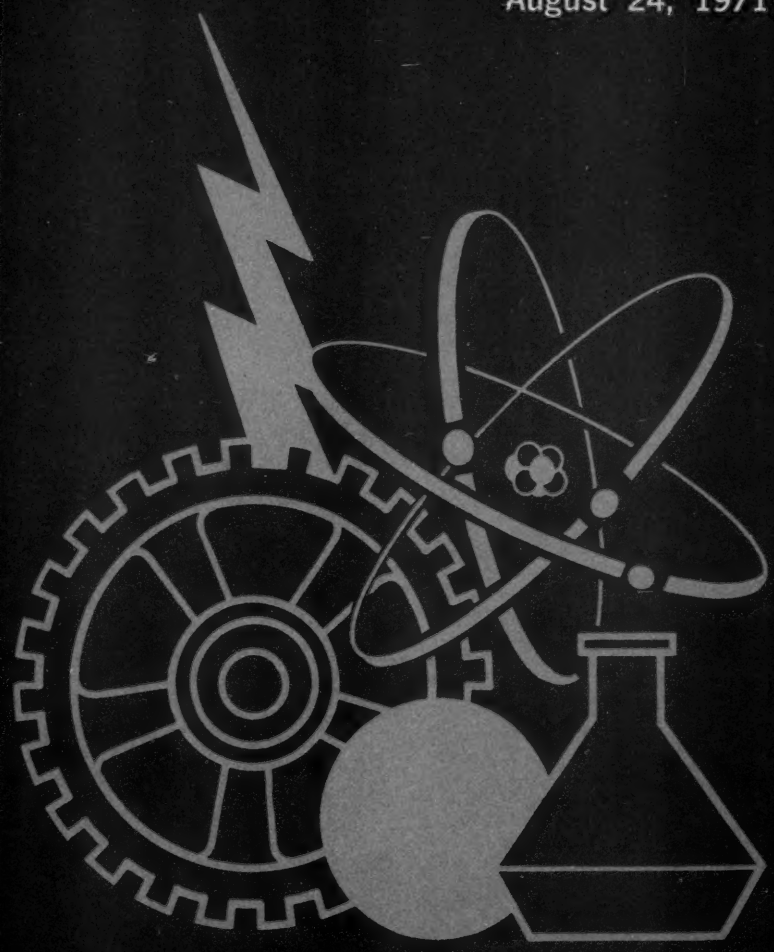
PATENTS

August 24, 1971



U. S. DEPARTMENT OF COMMERCE

Patent Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

August 24, 1971 Volume 889 Number 4

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PATENT OFFICE NOTICES

Printing of Chemical Patents

In view of financial and scheduling considerations associated with the closing of Fiscal Year 1971, no chemical patents will appear in the patent issues of August 24 and 31, and September 7 and 14, 1971. Chemical patents will again be issued on September 21, 1971.

RICHARD A. WAHL,
July 6, 1971. *Acting Commissioner of Patents.*

Supplement to the Manual of Classification

Over a span of years, Patent Examiners have created "unofficial" subclasses and digests to facilitate searches within the arts under their jurisdiction. A recent inventory of the unofficial U.S. patents in the Examiner search file (exclusive of designs) has enabled the issuance of a listing of unofficial subclasses and digests as a supplement to the Manual of Classification.

Current subscribers to the Manual of Classification shall receive the Supplement as soon as it becomes available (Sept.–Oct. '71), at a cost to be included in a forthcoming renewal fee. New subscriptions shall include the Supplement at a slightly higher cost.

It should be noted that the Supplement is intended only as an interim publication until such time as the Manual of Classification can be completely reprinted with the unofficial subclasses and digests shown in their proper relationship to respective official classes and subclasses. The reprinted Manual, in the described integrated format, shall be derived from computer stored data now in the process of being compiled and should be available by mid-1972.

WILLIAM R. NUGENT,
July 27, 1971. *Assistant Commissioner.*

Patents and Trademarks

Relief in Cases Affected by the Postal Emergency of March 1970

On June 30, 1971, President Nixon signed into law Public Law 92–34.

Public Law 92–34 requires claims for the benefit of an earlier filing date (Section 1.) and requests for such other relief as may be appropriate (Sec. 2.) to be filed in the Patent Office within 6 months after enactment, that is by December 30, 1971. Failure to file a statement within the noted period will result in loss of right to take advantage of the benefits of the law. Further explanation or evidence may be required at a subsequent time. Public Law 92–34 provides relief only for situations caused by the postal emergency which began on March 18, 1970, and ended on or about March 30, 1970, and for which there is no remedy under existing law.

The following explanation is designed to serve as a guide for persons desiring relief under the law.

The verified statement required to be filed under sections 1 and 2 of the law may be by any of the following:

(a) Applicant(s) for patent or trademark registration;
(b) Patentee(s) or trademark registrant;
(c) Owner(s) of record.

In cases involving plural inventors, statements made under (a) or (b) must be signed by all inventors.

The verified statement must specify the particular earlier date of receipt in the Patent Office to which the applicant, patentee or trademark registrant, or owner of record believes his application, fee or other paper would be entitled except for the delay caused by the postal emergency of March, 1970. The statement must be verified, that is, in the form of an oath or declaration. (37 CFR 1.68 (Patent Rule 68) and 2.20 (Trademark Rule 2.20).)

Evidence will not normally be required or considered by the Patent Office regarding a claimed filing date of March 18, 1970, or later, in applications actually filed before June 1, 1970. Claims for earlier filing dates in cases actually filed after June 1, 1970, or claiming a date prior to March 18, 1970, will be considered prima facie unreasonable unless an acceptable explanation of the basis for the claim is filed in the Patent Office with the claim or within 1 month or such longer time as may be prescribed by the Commissioner. Any claim not accepted by the Patent Office because it is obviously defective on its face or unreasonable may be subjected to further review by petition to the Commissioner.

The statement should adequately identify the involved application, patent, or trademark registration by including the name of the applicant, patentee or registrant, title of the invention or an identification of the mark, serial number, filing date, group art unit number and any other identifying data such as status of the case (e.g., awaiting first action, amendment, brief, etc.). Acceptable statements will be acknowledged, made of record and retained in the Patent Office files.

When practical, earlier filing dates accorded under this law, as well as the originally granted filing dates, will be identified on ensuing patents and trademark registrations. These dates will also be included in the OFFICIAL GAZETTE in connection with patents, trademark registrations and trademarks published for opposition. In other cases, such as applications in issue prior to filing of a claim, the patent or trademark registration number and claimed filing dates will be published in the OFFICIAL GAZETTE after December 30, 1971.

Patents issued with earlier filing dates afforded by this law will not be effective as prior art as of such earlier filing dates under subsection 102(e) of title 35 of the United States Code.

In a pending patent application in which a claim for an earlier filing date has been acknowledged under this law, applicants need not file a Rule 131 affidavit to overcome a reference having an effective filing date between the "earlier" and the actual filing date of the application. Intervening references of this type will be cited but not applied by the examiner. Although a statement claiming an earlier date is accepted by the Patent Office, the claimed earlier date may be called into question in subsequent inter partes proceeding in the Patent Office or in the courts. In these proceedings, the applicant or owner may be required to present further evidence establishing the filing date to which the application is entitled. In such cases a definite determination shall be made as to whether the applicant is entitled to the earlier date under the law.

In cases where a patent application or an application for registration or late renewal of a trademark is determined to have become abandoned for failure to meet a statutory time limit because of the postal emergency, the application will automatically be restored to pending status by the acceptance of the request, and prosecution or other processing of the application will be resumed. Similarly, if a trademark registration is determined to have been cancelled for failure to meet the statuory time limit within which to file the affidavit required under section 8 of the Trademark Act (15 U.S.C. 1058a) because of the said emergency, the order for cancellation will be rescinded.

As explained in the notice of January 26, 1971 (882 O.G. 1342), applicants who may be entitled to earlier filing dates should note that a change in their U.S. filing date might, in turn, alter the date of expiration of the 6- and 12-month periods for filing applications abroad under provisions of the Paris Convention for the Protection of Industrial Property.

WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

Dated: July 14, 1971.

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 71–10469; Filed 7–22–71; 8:52 am]

36 F.R. 13694; July 23, 1971

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,861,688, H. H. Harms, LIQUID CLARIFICATION SYSTEM, **filed** May 17, 1967, D.C., S.D. Ind. (Indianapolis), Doc. IP67-C-221, *Henry Manufacturing Co. Inc.* v. *Commercial Filters Corporation.* Claims 34 and 35 of patent are invalid and not infringed, Apr. 13, 1971.

2,867,001, Lewis, Rice and Estrin, MEANS AND METHOD FOR FORMING INDICIA ON THE SURFACE OF CONTINUOUS VULCANIZED PRODUCTS, **filed** May 24, 1971, U.S. Ct of App., 1st Cir., Mass. (Boston), Doc. 71-1164, *Teledyne Mid-America Corporation* v. *International Telephone & Telegraph Corporation.*

2,892,750, R. L. Ramm, METHOD AND APPARATUS FOR LOOSENING WET PIPE FROM A MANDREL; **3,000,776,** J. H. Swensen, APPARATUS FOR FORMING ASBESTOS-CEMENT PIPE; **3,137,509,** H. J. Kazienko, PIPE COUPLING; **3,095,346,** Sfiscko, Nebel and Van Derbeek, METHOD OF PRODUCING SHAPED ASBESTOS-CEMENT ARTICLES, **filed** Mar. 26, 1971, D.C., N.D. Ohio (Cleveland), Doc. 71-294, *Johns-Manville Corporation* v. *The Flintkote Company.*

2,914,823, X. L. Bean, CASTING MOLD AND PATTERN AND PROCESS; **2,991,267,** same, COATING SAND AND METHOD OF MAKING THE SAME, **filed** July 12, 1967, D.C., N.D. Ala. (Birmingham), Doc. C-67-393, *Morris Bean & Co.* v. *Reichhold Chemicals, Inc.* Judgment, restraining and enjoining defendant from further infringement of said patents, Apr. 2, 1971.

2,917,271, G. W. Banks, HIGH PRESSURE METERING VALVE, **filed** May 11, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71-1136-JWC, *George W. Banks* v. *Dragon Valve, Inc.*

2,920,971, S. D. Stookey, METHOD OF MAKING CERAMICS AND PRODUCT THEREOF, **filed** Nov. 8, 1963, D.C. Del. (Wilmington), Doc. 2763, *Corning Glass Works* v. *Anchor Hocking Glass Corporation.* Final judgment, patent valid and infringed by defendant. Perpetual injunction enjoining defendant, May 4, 1971.

2,934,932, H. B. Wagner, HYDRAULIC CEMENT MORTAR COMPOSITIONS AND METHODS OF USE; **3,243,307,** G. Selden, HYDRAULIC CEMENT MORTAR COMPOSITIONS, **filed** Oct. 30, 1969, D.C., N.D. Ill. (Chicago), Doc. 69c2242, *Tile Council of America, Inc.* v. *Chicago Mastic Company.* Said patents valid and infringed, Apr. 12, 1971.

2,942,768, R. J. McCall, BOX, **filed** Dec. 8, 1970, D.C., E.D.N.Y. (Brooklyn), Doc. 70-C-1496, *Mack-Chicago Corp.* v. *Sturdi-Box Corp.* Consent judgment for injunction, Apr. 9, 1971.

2,946,385, R. W. Dicken, WELL SYSTEM, **filed** May 12, 1971, D.C., S.D. Ohio (Dayton), Doc. 4051, *Dicken Manufacturing Co.* v. *Don Knicss.*

2,988,259, J. N. Callinicos, ADJUSTABLE FLORAL PACKAGE, **filed** Sept. 16, 1968, D.C., E.D.N.Y. (Brooklyn), Doc. 68-C-932, *Boas Box Co.* v. *Proper Folding Box Corp.* Patent Nos. 2,821,297 and 2,988,259 invalid, Apr. 30, 1971.

2,991,267. (See 2,914,823.)

3,000,776. (See 2,892,750.)

3,011,920, C. F. Shipley, METHOD OF ELECTROLESS DEPOSITION ON A SUBSTRATE AND CATALYST SOLUTION THEREFOR, **filed** Feb. 17, 1968, D.C. Conn. (New Haven), Doc. 12419, *Shipley Company, Inc.* v. *MacDermid, Inc.* Stipulation and order dismissing action, Mar. 9, 1971.

3,019,497, Horton, Ashbrook and Feagin, MAKING FINE GRAINED CASTINGS; **3,157,926,** same; **3,259,948,** R. C. Feagin, same, **filed** Apr. 13, 1971, D.C., S.D. Fla. (Miami), Doc. 71-566-C-CA, *Hownet Corp.* v. *Aircraft Castings, Inc.*

3,025,200, W. R. Powers, CELLIFORM STRUCTURE AND METHOD OF MAKING SAME, **filed** Apr. 1, 1971, D.C. Conn. (New Haven), Doc. 14335, *Scott Paper Company* v. *Olin Corporation.*

3,037,865, Lilien and Glabe, PEANUT BUTTER PRODUCT AND PROCESS OF MAKING THE SAME, **filed** June 7, 1971, D.C., W.D. Pa. (Pittsburgh), Doc. 71-529-C.A., *National Bakers Services* v. *General Nutrition Corp. et al.*

3,041,963, Hazelton and Ostendorf, STOP DEVICE FOR PRESS BRAKES AND THE LIKE; **Re. 26,236,** Hazelton, Griesheimer and Ostendorf, LEVEL CONTROL FOR PRESS BRAKES AND THE LIKE, **filed** July 19, 1968, D.C., N.D. Ill. (Chicago), Doc. 68c1343, *The Cincinnati Shaper Company* v. *Dreis & Krump Manufacturing Co.* Ordered that the defendant be, and it is hereby authorized to continue in the manufacture, use, and sale of its accused level control system for hydraulic press brakes. Claims 1 through 4 and 6 of Patent 3,041,963 are invalid, May 7, 1971.

3,045,922, A. E. Jensen, SELF-ERECTING SPRINKLER HEAD FOR IRRIGATION PIPELINES, **filed** June 7, 1971, D.C., N.D. Tex. (Dallas), Doc. CA-3-4845-A, *Arthur E. Jensen* v. *IRECO Industries, Inc. and Joe Ed Helms.*

3,048,668, E. M. Weiss, TRANSDUCER SUSPENSION SYSTEM, **filed** Oct. 14, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c2553, *Beltone Electronics Corp.* v. *Otto Butz, doing business as Otto Butz Lab. of Audio Aids and North American Phillips Co.* Stipulation and order, dismissed without prejudice, Apr. 6, 1971.

3,067,433, Dietz, MacFadgen and Bossemeyer, SELF-CONTAINED SEWAGE SYSTEM; **3,172,131,** Herkenhine and Lee, SEWAGE SYSTEM, **filed** Sept. 3, 1965, D.C., C.D. Calif. (Los Angeles), Doc. 65-1319-CC, *Monogram Industries, Inc.* v. *Koehler Aircraft Products Company.* Consent judgment and order dismissing action with prejudice, Mar. 9, 1966.

3,067,879, W. O. Baker, SKIM TANK; **3,306,448,** same, AUTOMATIC SKIM TANK AND SYSTEM, **filed** May 13, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71-1159-IH, *Swimquip, Incorporated* v. *Swimrite, Inc. and Swimrite Manufacturing Co., Inc.*

3,075,167, R. J. Kinkaid, PANEL CONNECTOR WITH FLAG-TYPE TERMINALS, **filed** Sept. 11, 1968, D.C.. N.D. Ill. (Chicago), Doc. 68c1688, *AMP Incorporated* v. *Moles Products Company.* Claims 5, 6, 7, 8 and 10 of said patent are valid and infringed, Apr. 20, 1971.

3,088,386, M. J. Sugarman, Jr., ELECTROPHOTOGRAPHIC PHOTOCOPY MACHINE, **filed** Mar. 24, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c751, *American Photocopy Equipment Co.* v. *Scott Paper Co. et al.* Voluntary notice of dismissal by plaintiff under Rule 41(a)(1), Apr. 15, 1971.

3,095,346. (See 2,892,750.)

3,095,470, H. Dozier, INSULATED ELECTRICAL TERMINAL CONSTRUCTION, **filed** Sept. 17, 1965, D.C., S.D.N.Y. Doc. 65-C-2809, *U.S. Terminals, Inc.* v. *Sealectro Corp.* Consent judgment, plaintiff owner of patent, defendants permanently enjoined, May 13, 1971.

3,122,610, A. Cscisatka, CIRCUITRY FOR MULTIPLEX TRANSMISSION OF FM STEREO SIGNALS WITH PILOT SIGNAL, **filed** Apr. 15, 1971, D.C., S.D.N.Y., Doc. 71-C-1687, *General Electric Company* v. *The Magnavox Company, Inc.* Same, **filed** Apr. 15, 1971, D.C., S.D.N.Y., Doc. 71-C-1688, *General Electric Company* v. *Philco Distributors, Inc.* Same, **filed** Apr. 15, 1971, D.C., S.D.N.Y., Doc. 71-C-1689, *General Electric Company* v. *Morse Electro Products Corp.*

3,137,509. (See 2,892,750.)

3,157,926. (See 3,019,497.)

3,172,131. (See 3,067,433.)

3,259,948. (See 3,019,497.)

3,306,448. (See 3,067,879.)

Re. 26,236. (See 3,041,963.)

Service by Publication

Larry K. Clark

In accordance with Rule 47(b) of the Rules of Practice of the United States Patent Office in Patent Cases, notice is hereby given of the filing on July 3, 1968 and August 20, 1968, respectively, of applications for patent entitled "Load Control Error Detector," and "Capacitor Type Timing Circuit Utilizing Energized Voltage Comparator," on behalf of Larry K. Clark, whose last known address is 917½ West Locust St., Davenport, Iowa. These applications were made in compliance with Rule 47(b) and 35 U.S.C. 118 by E. W. Bliss Company without execution by the said Larry K. Clark. Notice of the filing directed to the above noted address has been returned undelivered.

Any action to be taken by the said Larry K. Clark in connection with the said applications must be taken within thirty days of the publication of this notice.

RICHARD A. WAHL,
Assistant Commissioner of Patents.

James F. Tamburrino

In accordance with Rule 47(b) of the Rules of Practice of the United States Patent Office in Patent Cases, notice is hereby given of the filing on September 24, 1969, of an application for patent entitled "Electric Monitoring Device," on behalf of James F. Tamburrino, whose last known address is 5123 33rd Ave., Kenosha, Wis. The application was made in compliance with Rule 47(b) and 35 U.S.C. 118 by Abbott Laboratories without execution by the said James F. Tamburrino. Notice of the filing directed to the above noted address has been returned undelivered.

Any action to be taken by the said James F. Tamburrino in connection with the said application must be taken within thirty days of the publication of this notice.

F. H. BRONAUGH,
May 26, 1971. *Assistant Commissioner of Patents (Acting).*

Disclaimers

Design No. 219,409.—*Roger J. Kuhns,* Lincoln, Mass. DIE CUTTER FOR DEVELOPED FILM OR SIMILAR ARTICLE. Patent dated Dec. 8, 1970. Disclaimer filed Mar. 5, 1971, by the assignee, *Avant Incorporated.*

Hereby enters this disclaimer to the sole claim of said patent.

3,034,841.—*Kenneth A. Blevins,* Missoula, Mont. PORTABLE-SEWING-MACHINE TABLE. Patent dated May 15, 1962. Disclaimer filed May 6, 1971, by the assignee, *Sirco Manufacturing, Inc.*

Hereby disclaims the terminal portion of the term of the patent subsequent to Dec. 5, 1978.

3,175,330.—*Henry T. Holsman,* Santa Barbara, Calif. BEAD FOR PLASTER, STUCCO, AND THE LIKE. Patent dated Mar. 30, 1965. Disclaimer filed June 16, 1971, by the inventor.

Hereby enters this disclaimer to claims 1 and 4 of said patent.

3,295,334.—*Nils Lennart Hultgren,* Stockholm, Sweden. HEAT OPERATED REFRIGERATOR OPERABLE ON GAS OR ELECTRICITY AND CONTROL MECHANISM THEREFOR. Patent dated Jan. 3, 1967. Disclaimer filed May 21, 1971, by the assignee, *Aktiebolaget Electrolux.*

Hereby enters this disclaimer to claims 1 to 9, inclusive of said patent.

3,420,891.—*Orville Leonard Mageli,* Buffalo, and *Richard Anthony Bafford,* Tonawanda, N.Y. TRIS-PEROXIDES FROM 1,3,5-TRIISOPROPYLBENZENE. Patent dated Jan. 7, 1969. Disclaimer filed Dec. 18, 1970, by the assignee, *Pennwalt Corporation.*

Hereby enters this disclaimer to claims 1–5 of said patent.

Certificates of Correction for the Week of Aug. 24, 1971

D. 220,128	3,558,667	3,573,270	3,576,607
Re. 27,117	3,559,611	3,573,273	3,576,681
3,124,653	3,561,398	3,573,285	3,576,682
3,489,599	3,561,759	3,573,309	3,576,718
3,507,743	3,561,979	3,573,416	3,576,739
3,519,614	3,562,112	3,573,420	3,576,754
3,522,243	3,562,266	3,573,589	3,576,801
3,523,153	3,563,137	3,573,689	3,576,832
3,527,704	3,563,979	3,573,735	3,576,883
3,529,922	3,565,197	3,573,749	3,576,901
3,531,724	3,566,437	3,573,831	3,576,916
3,537,363	3,566,561	3,574,087	3,576,985
3,539,513	3,566,827	3,574,172	3,577,359
3,541,435	3,566,996	3,574,173	3,577,431
3,541,981	3,567,487	3,574,267	3,577,451
3,544,657	3,567,586	3,574,597	3,577,682
3,545,431	3,568,111	3,574,733	3,578,044
3,546,217	3,568,148	3,574,748	3,578,089
3,547,822	3,568,735	3,574,870	3,578,127
3,549,518	3,569,846	3,575,172	3,578,313
3,549,656	3,570,435	3,575,175	3,578,445
3,550,662	3,570,663	3,575,227	3,578,462
3,551,527	3,570,780	3,575,429	3,578,581
3,552,019	3,571,757	3,575,849	3,578,593
3,553,133	3,571,857	3,575,869	3,578,596
3,553,199	3,571,920	3,575,872	3,578,637
3,553,429	3,572,166	3,575,914	3,578,933
3,554,745	3,572,226	3,575,941	3,578,937
3,555,161	3,572,443	3,575,968	3,579,262
3,555,587	3,572,729	3,575,971	3,579,310
3,557,650	3,572,740	3,576,011	3,579,450
3,558,045	3,572,932	3,576,436	3,579,457
3,558,479	3,573,061	3,576,476	3,580,038
3,558,491	3,573,261	3,576,519	3,580,839

Patents Available for Licensing or Sale

3,340,843. MEANS FOR SWEEPING PRESSURE MINES. L. F. Jones, P.O. Box 434, Lynn Haven, Fla., 32444.

3,558,252. RADIATING ELEMENT. Industrias Del Hogar, S.A., Navarra, Spain. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,565,329. TEAR STRAND FOR PACKAGES. Springfield Wire, Inc., Springfield, Mass. Correspondence to: Chapin, Neal and Dempsey, Third National Bank Bldg., Springfield, Mass., 01103.

The following 2 patents are offered by: Richard S. Kubik, 1030 Villa Vista Drive, Colby, Kans., 67701.

3,512,543. FLOW CONTROL SPRINKLER.

3,572,554. PESTICIDE APPLICATOR.

Wood Industries, Inc., is prepared to grant non-exclusive licenses under the following 5 patents or to sell these patents upon reasonable terms to domestic manufacturers.

Applications for licenses or sale may be addressed to Wood Industries, Inc., Box 1112, Plainfield, N.J., 07061. Attn.: C. H. Ringe, Patent-Engineering Department.

3,426,941. ADJUSTABLE VERTICAL FEEDER MEANS FOR STACKED ARTICLES.

3,481,590. FEEDER MEANS WITH HEATER.

3,512,626. FEEDER MEANS.

3,563,169. APPARATUS FOR PRINTING ARTICLES HAVING AN UPSTANDING FLANGE AROUND THEM.

3,583,545. ARTICLE TRANSFER MEANS.

General Electric Company is prepared to grant non-exclusive licenses under the following 89 patents upon reasonable terms to domestic manufacturers.

Applications for license under the following 4 patents may be addressed to General Electric Company, Patent Counsel, Insulating Materials Department, Bldg., 33, Room 209, 1 River Road, Schenectady, N.Y., 12345.

3,500,094. COMPOSITE LAMINATED MICA-POLYAMIDE FIBER PAPER COMMUTATOR CONE.

3,519,697. FLAME RETARDANT EPOXY RESINS.

3,533,932. PROCESS OF DIMERIZING CARBOXYLIC ACIDS IN A CORONA DISCHARGE.

3,571,491. ELECTRICAL INSULATING COMPOSITIONS OF POLYESTER RESIN, EPOXY RESIN, POLYVINYL ACETAL RESIN AND FINELY DIVIDED FILLER.

Applications for license under the following 13 patents may be addressed to: Patent Counsel, LSTG-1 & MT Divisions, General Electric Company, 1 River Road, Bldg., #43, Schenectady, N.Y., 12305.

3,377,778. METHOD AND APPARATUS FOR DEGASSING LIQUIDS.

3,397,080. PROTECTIVE CERAMIC COATING.

3,420,054. COMBINED STEAM-GAS CYCLE WITH LIMITED GAS TURBINE.

3,422,800. COMBINED GAS TURBINE AND WASTE HEAT BOILER CONTROL SYSTEM.

3,423,078. COMBINED JET AND DIRECT AIR CONDENSER.

3,536,134. CONDENSER.

3,561,405. SECONDARY FUEL SYSTEM FOR A SUPPLEMENTARY FIRED HEAT RECOVERY STEAM GENERATOR.

3,561,886. TURBINE BUCKET EROSION SHIELD ATTACHMENT.

3,573,521. CONDUCTOR BLADE FOR A LIQUID METAL COLLECTOR.

3,564,315. EVAPORATIVE COLLED COLLECTOR RINGS FOR DYNAMOELECTRIC MACHINE.

3,572,958. ELECTROHYDRAULIC CONTROL WITH THROTTLE PRESSURE COMPENSATOR.

3,572,968. TURBINE BUCKET COVER.

3,578,281. PRECISION ALIGNMENT FIXTURE.

Applications for license under the following 71 patents may be addressed to: Patent Counsel, Lamp Division, General Electric Company, Nela Park, Cleveland, Ohio, 44112.

3,211,952. FLUORESCENT LAMP OPERATING CIRCUIT.

3,261,676. METHOD FOR FORMING SILICA ARTICLES.

3,275,470. GLASS BODIES AND METHODS OF TREATMENT THEREOF.

3,319,456. QUANTITATIVE DIFFERENTIAL THERMAL ANALYSIS APPARATUS.

3,324,742. CONTROL MECHANISM FOR ROTATING HEADS ON ROTARY INDEXING TURRET TYPE MACHINES.

3,324,824. LAMP BULB COATING APPARATUS.

3,326,350. LAMP BULB ASSORTING APPARATUS.

3,329,766. ELECTRIC CABLE.

3,341,731. REFLECTOR ARC LAMP WITH ARC TUBE SUPPORT COMPRISING ARC TUBE INLEAD CONNECTORS FASTENED TO THE OUTER END OF FERRULES SEALED IN THE OUTER ENVELOPE.

3,346,714. LAMP BASE TERMINAL WELDING APPARATUS.

3,351,334. CONTAINER FOR MOLTEN FUSED SILICA.

3,351,796. CALCIUM HALOPHOSPHATE PHOSPHOR FOR HIGHLY LOADED LAMP.

3,358,167. JACKETED DISCHARGE LAMP.

3,374,122. EXPENDABLE IMMERSION THERMOCOUPLE INCLUDING WEIGHT.

3,402,813. LAMP BULB CONVEYOR MECHANISM.

3,409,792. FLUORESCENT PANEL LAMPS WITH WHITE EMITTING PHOSPHOR COATED ON ENVELOPE BACKPLATE AND RED EMITTING PHOSPHOR COATED ON ENVELOPE FACEPLATE.

3,420,694. PLURAL COATED TRANSPARENT COLORED LAMP AND METHOD OF FORMING SAME.

3,441,770. ELECTRIC INCANDESCENT LAMP WITH SHOCK AND VIBRATION RESISTANT FILAMENT SUPPORT STRUCTURE.

3,448,318. LOW PRESSURE ELECTRIC DISCHARGE LAMP ELECTRODE.

3,453,470. JACKETED FLUORESCENT LAMP UTILIZING STANDARD BASE PLUS SPACER AND WIND CAP.

3,488,176. STEM MAKING MACHINE FOR ELECTRIC LAMPS AND SIMILAR DEVICES.

3,493,405. SEMICONDUCTOR ENCAPSULATION GLASS.

3,493,718. SEMICONDUCTOR WELDING CIRCUIT.

3,500,118. ELECTRODES GASEOUS ELECTRIC DISCHARGE DEVICES UTILIZING FERRITE CORES.

3,521,120. HIGH FREQUENCY ELECTRODELESS FLUORESCENT LAMP ASSEMBLY.

3,545,987. TRANSPARENT YTTRIA-BASED CERAMICS AND METHOD FOR PRODUCING SAME.

3,551,171. $BaO—PbO—SiO_2$ SEMICONDUCTOR ENCAPSULATION GLASS.

3,551,180. AQUEOUS BINDER WITH ADHERENCE ADDITIVE FOR LAMP PHOSPHOR COATING.

Re. 26,122. DUCTILE NIOBIUM AND TANTALUM ALLOYS.

3,294,497. COATED COLUMBIUM OR TANTALUM BASE METAL.

3,300,285. POWDER-METALLURGICAL TUNGSTEN-BASE ALLOY AND METHODS OF MAKING SAME.

3,305,490. FLUORESCENT PHOSPHATE GLASS.

3,310,418. FLUORESCENT LAMP COATING.

3,315,216. LAMP BASE AND TERMINAL STRUCTURE.

3,324,699. PRODUCTION OF NON-EARING MOLYBDENUM SHEET.

3,334,381. BASE-MAKING MACHINE.

3,345,687. INJECTION MOLDING APPARATUS.

3,346,380. COLUMBIUM-BASE ALLOYS.

3,357,788. PROCESS FOR PRODUCING FINELY DIVIDED CALCIUM FLUORIDE HAVING CONTROLLED PARTICLE SIZE.

3,374,176. PROCESS FOR MAKING N-TYPE ZINC CADMIUM SULFIDE ELECTROLUMINESCENT MATERIAL.

3,378,354. SYNTHESIS OF CALCIUM CHLORSPODIOSITE.

3,378,499. SYNTHESIS OF HALOPHOSPHATE PHOSPHORS USING CALCIUM CHLORSPODIOSITE.

3,379,520. TANTALUM-BASE ALLOYS.

3,379,649. PREPARATION OF HALOPHOSPHATE PHOSPHOR.

3,384,479. COLUMBIAN-BASE ALLOYS.

3,384,598. HALOPHOSPHATE PHOSPHOR TREATMENT PROCESS.

3,395,979. PROCESS FOR THE CONVERSION OF CALCIUM ACID PHOSPHATE DIHYDRATE TO CALCIUM ACID PHOSPHATE.

3,396,118. STRONTIUM MAGNESIUM ORTHOPHOSPHATE PHOSPHORS.

3,416,126. CONTACT PIN AND MANUFACTURE THEREOF.

3,420,625. RECRYSTALLIZATION OF ANHYDROUS CALCIUM ACID PHOSPHATE FROM THE DIHYDRATE FORM.

3,420,689. METHOD FOR FORMING AN OXIDATION RESISTANT COATING ON A SUBSTRATE.

3,429,753. METHOD OF FORMING METAL BORIDE COATING ON WIRE.

3,430,089. CALCIUM HALOPHOSPHATE PHOSPHORS.

3,430,189. RECESSED DOUBLE CONTACT PIN BASE.

3,434,811. TUNGSTEN-HAFNIUM-OXYGEN ALLOYS.

3,434,829. TUNGSTEN-BASE ALLOYS.

3,440,853. METAL EXTRUSION METHOD.

3,441,391. TUNGSTEN-BASE ALLOYS.

3,441,512. YTTRIUM VANADATE EUROPIUM PHOSPHOR PREPARATION BY PRECIPITATION USING AMMONIUM CARBONATE.

3,447,921. MOLYBDENUM-BASE ALLOY.

3,450,642. STRONTIUM YTTRATE LUMINESCENT MATERIALS.

3,450,643. ALKALINE EARTH YTTRATE LUMINESCENT MATERIALS.

3,458,452. LUMINESCENT MATERIALS OF ZINC MAGNESIUM GERMANATE ACTIVATED WITH MANGANESE.

3,462,372. METHOD FOR PRODUCING ELECTRILUMINESCENT ZINC-CADMIUM SULFIDE-OXIDE PHOSPHORS.

3,475,144. COMPOSITE METAL CONDUCTOR SEALED TO GLASS.

3,479,296. YTTRIUM VANADATE EUROPIUM PHOSPHOR PREPARATION BY PRECIPITATION.

3,484,382. TREATMENT OF RECRYSTALLIZED YVO_4: Eu LUMINESCENT MATERIALS.

3,485,767. CALCIUM HALOPHOSPHATE PHOSPHOR TREATMENT PROCESS.

3,488,549. DISPENSER CATHODE MATERIAL AND METHOD OF MANUFACTURE.

3,493,515. RECRYSTALLIZATION OF YTTRIUM VANADATE LUMINESCENT MATERIALS.

3,544,479. LITHIUM VANADIUM GARNET PHOSPHORS.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JULY 27, 1971

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
* Date of Oldest Application (New)	
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-04-70
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	3-05-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	7-01-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	8-03-70
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	*2-24-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	11-02-70
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	*2-18-70
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-30-70
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	7-08-70
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	6-19-70
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	6-29-70
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	7-02-70
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	5-01-70
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	6-03-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—C. F. GAREAU, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	8-10-70
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	7-01-70

Expiration of patents: The patents within the range of numbers indicated below **expire during** July 1971, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

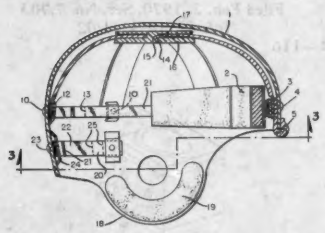
Patents..... Numbers 2,682,658 to 2,685,084, inclusive
Plant Patents..... Numbers 1,288 to 1,293, inclusive

PATENTS

GRANTED AUGUST 24, 1971

GENERAL AND MECHANICAL

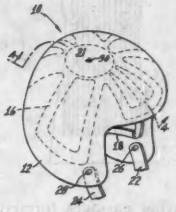
3,600,713
ATHLETIC HELMET
Mike C. Holt, c/o Southern Athletic Service P.O.Box 46, Leesburg, Fla.
Continuation-in-part of application Ser. No. 796,336, Feb. 4, 1969. This application July 7, 1969, Ser. No. 839,585
Int. Cl. A42b *1/08*
U.S. Cl. 2—3 **4 Claims**



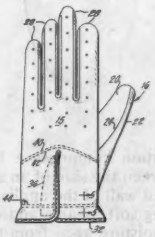
The athletic helmet has a sectional pad for the forehead and temple areas of the wearer, which pad has ends tapering outwardly. This pad is mounted in the shell by mating tapes, one of which is affixed to the outer surface of said pad, and the other mating tape is attached to the inside surface of the shell through a horizontally positioned plastic band that extends about the inside frontal half of the shell. One of the mating tapes carries woven hooks and the other facing mating tape carries woven loops. Extending back from the respective ends of the said pad is a head suspension composed of two web horizontal bands, one of which is the chordal band attached at spaced intervals to the interior of the shell and the other of which is the head contacting band affixed at medial points to the underlying chordal band. At the rear of the shell below the head suspension bands are two web, horizontal bands of the same type as the head suspension, for contacting and protecting the neck. The helmet has additional protective means including a soft crown piece at the top, inside of the helmet from which radiate spaced sling straps of the same soft material and which are attached to the shell between the latter's inside surface and the chordal head band.

3,600,714
HYDRAULIC HELMET
James R. Cade, and Brady B. Greathouse, both of Gainesville, Fla., assignors to Hop-N-Gator, Inc., Tallahassee, Fla.
Filed Mar. 19, 1969, Ser. No. 808,559
Int. Cl. A42b *1/08*
U.S. Cl. 2—3 **25 Claims**

A helmet including an outer resiliently deformable shell, an inner compressible liner contacting the user's head, and an intermediate portion positioned between the shell and liner including a hydraulic cushioning assembly. The assembly includes a plurality of spaced elastic cells and an elastic sump generally coextensive with the interior of the shell and means connecting some of the cells to other of the cells and/or to the sump for intercommunication of the hydraulic fluid therebetween. The connecting means includes constrictive passageways to restrict the fluid flow therethrough. The interaction of the deformable shell hydraulic assembly and compressible liner results in the dissipation, absorption and distribution of the energy of an external blow delivered to the shell.

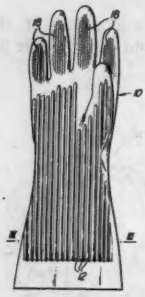


3,600,715
GOLF GLOVE PALM-SMOOTHING MEANS
Frank E. Perrella, Gloversville, N.Y., assignor to Joseph Perella, Inc., Gloversville, N.Y.
Filed Jan. 21, 1970, Ser. No. 4,698
Int. Cl. A41d *19/00, 19/02*
U.S. Cl. 2—162 **5 Claims**



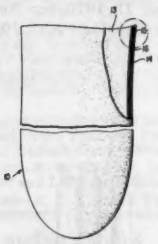
A golf glove, including a rear and a palm portion; a V-shaped opening in the rear portion of the glove, extending inward and tapering inward from the wrist edge of the glove, for permitting the glove to be donned and removed; fastening means of the "Velcro" type along the edges of the opening to fasten it closed and to facilitate individual adjustment and tightening at the wrist; first elastic means for pulling the rear of the glove laterally inward, the elastic means being curved such that the concave curvature is facing toward the wrist edge of the glove; second elastic means encircling the glove around the wrist and intersecting the fastening means, for holding the glove tightly on the hand.

3,600,716
FLEXIBLE GLOVES HAVING INTERNAL PASSAGES
Albert Thomas Frank Berry, Barnham, Sussex, England, assignor to James North & Sons Limited, Hyde, England
Filed May 6, 1969, Ser. No. 822,242
Int. Cl. A41d 19/00
U.S. Cl. 2—167 5 Claims



Flexible gloves having passages formed along the inside thereof to provide cooling, maximum flexibility and sensitivity.

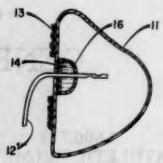
3,600,717
DISPOSABLE STUMP SOCK
Laura McKeehan, 709 N. Greenbrier St., Arlington, Va.
Filed Sept. 26, 1969, Ser. No. 861,371
Int. Cl. A61f 1/02
U.S. Cl. 3—19 8 Claims



The instant invention comprises a laminated cushioning means disposed between the skin of an amputee's leg and the encompassing cupped wall of the appliance, the inner side of said means remaining soft, pliable and dry at all times while transferring latent moisture away from the skin of the amputee and storing same in spaced relation thereto and to said wall. Said means may be readily removed from the appliance as well as the stump and disposed of and replaced by a new one with the minimum of trouble and expense.

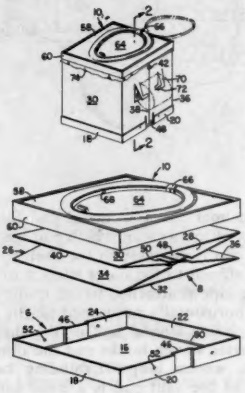
3,600,718
INFLATABLE PROSTHESIS
Jack L. Boone, Larkin Township, Midland County, Mich., assignor to Dow Corning Corporation, Midland, Mich.
Filed Dec. 29, 1969, Ser. No. 888,795
Int. Cl. A61f 1/00, 1/24; A41c 3/10
U.S. Cl. 3—36 6 Claims

An improved surgically implantable mammary prosthesis comprising an inflatable shell and a filling stem for said shell for introduction of a filling fluid to inflate the shell. At the point of introduction of the stem into the shell, there is provided a capsule of sealing gel through which the stem passes. After implantation and inflation, the stem is withdrawn either wholly or partially and the gel in the capsule seals the stem outlet against leakage of the inflating fluid. The inflation



system is also suitable for prostheses other than mammary prostheses.

3,600,719
PORTABLE COLLAPSIBLE COMMODE
Paul F. Karr, 31835 Chicoine, Hayward, Calif.
Filed Feb. 2, 1970, Ser. No. 7,903
Int. Cl. A47k 11/02
U.S. Cl. 4—116 12 Claims

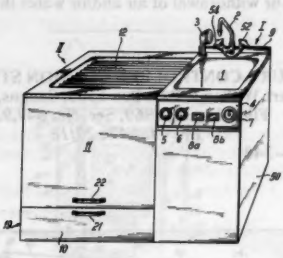


A portable collapsible or knockdown type of commode having a bottom section, a body section and a cover section. The body section is open at the top and bottom and is foldable between an open operative position and a flat inoperative position. In its open position, the bottom end of the body may be supported on the bottom with the cover overlying the upper end of the body. In its folded condition, the body may be stored completely within the bottom section and the cover section inserted over the bottom section to provide a flat package.

3,600,720
COMBINATION SINK AND SHOWER UNIT
Hans Marschall, Mettmann, Germany, assignor to Marshcall K. G., Mettmann, Germany
Filed May 1, 1968, Ser. No. 725,836
Int. Cl. A47k 4/00
U.S. Cl. 4—145 13 Claims

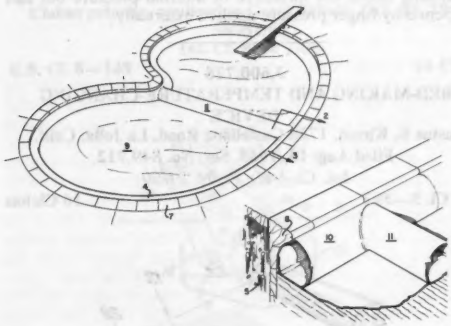
A combination sink and shower unit includes a cabinet having a top wall with a basin with connections for delivering water through a spout mounted adjacent one end of the basin and/or for delivering water through a hand spray shower which is mounted on one corner of the cabinet. The cabinet encloses a heater with suitable controls for heating the water to a suitable temperature which are visible on a front panel of the cabinet. The device includes a shower stall portion which includes a tray or catch basin at floor level. When

folded, the shower stall portion defines a sink drain extending to one side of the sink basin but when it is opened it defines a



shower stall with a high back wall for mounting the hand spray and a shower curtain.

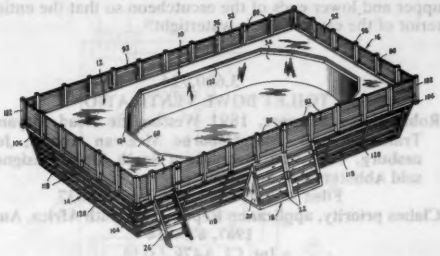
3,600,721
SWIMMING POOL COVER
Eugene H. Pusey, 6202 E. Calle Camelia, Scottsdale, Ariz.
Filed Sept. 1, 1967, Ser. No. 674,690
Int. Cl. E04h *3/19*
U.S. Cl. 4—172.12 **6 Claims**

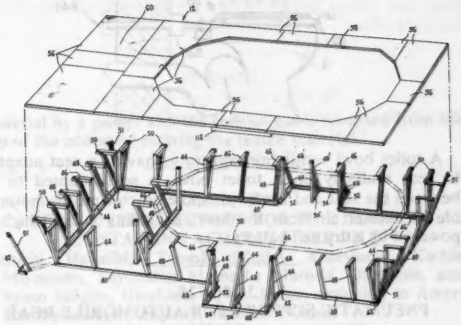


This invention relates to a floating cover for a swimming pool adapted to protection of a water-filled pool from dirt and debris, the retardation of evaporation, the conservation of chemicals placed in the water, and the protection of children and others who might inadvertently fall into the pool. It is characterized by a sheet of impervious material supported around its periphery by a raised inflatable tubular segment, the whole cover free-floating and unattached to the pool sides but fitting snugly against the sides so as to afford the above protections.

3,600,722
POOL AND ENCLOSURE THEREFOR
Joseph Diemond, Simsbury; Melvin Y. Gershman, West Hartford, Conn.; Henry L. Sundberg, Jr., and Norbert A. Vangsness, Longmeadow, Mass., assignors to Coleco Industries, Inc., Hartford, Conn.
Filed Feb. 17, 1970, Ser. No. 12,090
Int. Cl. E04h *3/18*
U.S. Cl. 4—172.19 **15 Claims**

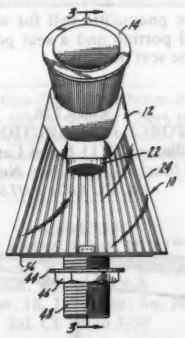
A swimming pool assembly for aboveground installation has a self-supporting swimming pool and a self-supporting deck enclosure extending about the periphery of the swimming pool with a multiplicity of wall panels providing a sidewall about at least a portion of the swimming pool assembly. Means on the deck enclosure are engaged with the swimming pool to hold the deck closely adjacent the upper end of the swimming pool for limited relative movement in a





vertical direction but permit relative horizontal movement of the deck enclosure and swimming pool during use thereof.

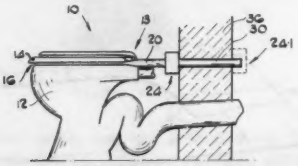
3,600,723
FAUCET-MOUNTING CONSTRUCTION
Paul A. Mongerson, Elyria; Alfred M. Moen, Grafton, and Charles G. Mackie, Elyria, all of, Ohio, assignors to Stanadyne, Inc., Hartford, Conn.
Filed Aug. 18, 1969, Ser. No. 850,977
Int. Cl. E03c *1/04*
U.S. Cl. 4—192 **12 Claims**



Means for mounting a mixing faucet having a mixing valve in which the mixing valve is supported on a bracket attached to a sink top at its lower end. An escutcheon surrounds the mixing valve and is seated at its lower end upon the sink top.

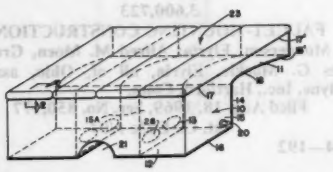
The upper portion of the escutcheon is attached to an upper portion of the mixing valve by a threaded nut, with the nut providing a downwardly directed force upon the top of the escutcheon to hold it to the sink top. There are seals at the upper and lower ends of the escutcheon so that the entire interior of the escutcheon is watertight.

3,600,724
TOILET BOWL VENTILATION
Robin Harry Stamper, 1891 Westbourne Road, Bryanston, Transvaal, and John Osborne McEwan Abbott, Johannesburg, Transvaal, Republic of South Africa, assignor by said Abbott to said Stamper
Filed Aug. 5, 1968, Ser. No. 750,037
Claims priority, application Republic of South Africa, Aug. 10, 1967, 67/4814
Int. Cl. A47k *13/30*
U.S. Cl. 4—217 **4 Claims**



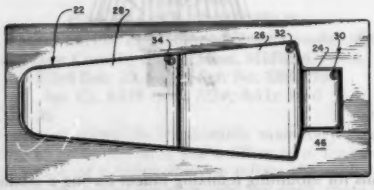
A toilet bowl ventilation apparatus having a seat adapted to seat sealingly on a toilet bowl, a seal adapted to fit between the seat and the bowl, and extractor means mountable to extract air from the bowl, including a fan which is powered by a dry cell battery.

3,600,725
PNEUMATIC SUPPORT FOR AUTOMOBILE REAR SEATS
James I. McCartney, 302-117 Nymark Ave., Willowdale, Ontario, Canada
Filed Sept. 8, 1969, Ser. No. 856,057
Int. Cl. A47c *27/08*
U.S. Cl. 5—94 **1 Claim**



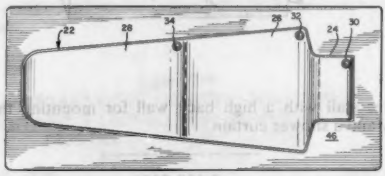
A low-pressure pneumatic cell for automobile rear seats which has a well portion and a seat portion with a padded panel covering the seat portion.

3,600,726
SUPPORT FORCE DISTRIBUTION APPARATUS
Harry Albert Williams, 28711 Indies Lane, Saugus, Calif.
Filed Mar. 17, 1969, Ser. No. 807,813
Int. Cl. A47c *27/18*
U.S. Cl. 5—348 **6 Claims**



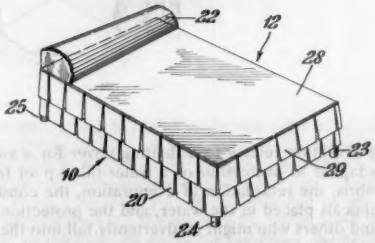
The specification and drawing discloses a therapeutic or comfort pad as for sitting. The apparatus includes a flexible film outer envelope substantially filled with a fluid pervious foam material. Water or other noncompressible fluid is introduced through a valve in the envelope and the proportion of air to water to foam is adjusted at the valve by the introduction or withdrawal of air and/or water therethrough.

3,600,727
PRESSURE-CONTROLLED CUSHION STRUCTURE
Harry Albert Williams, P.O. Box 1505, Saugus, Calif.
Filed Aug. 6, 1969, Ser. No. 847,936
Int. Cl. A47c *27/18*
U.S. Cl. 5—348 **5 Claims**



A therapeutic comfort pad or mat includes a flexible film outer envelope substantially filled with a fluid-pervious foam material. Noncompressible fluid is introduced through a valve in the envelope and the proportion of air to water to foam is adjusted at the valve by the introduction or withdrawal of air and/or water therethrough. The valve is self-closing under the influence of internal pressure but can be opened by finger pressure applied externally.

3,600,728
BED-MAKING AND TEMPERATURE-CHANGING DEVICE
Augustus B. Kinzel, 1738 Castellana Road, La Jolla, Calif.
Filed Aug. 13, 1969, Ser. No. 849,712
Int. Cl. A47c *19/04, 21/00*
U.S. Cl. 5—362 **16 Claims**

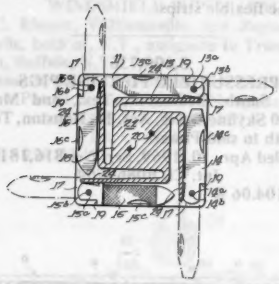


The device comprises a canopy coextensive with a bed which canopy is supported by a vertically movable member adapted to raise it from, and lower it onto, the bed. The upper surface of the canopy carries a fabric material which covers the bed when the canopy is in the lowered position. The lower surface of the canopy may be provided with heating or cooling means for warming or cooling the bed surface.

3,600,729
MULTIPLE TOOL POCKET IMPLEMENT
Clayton A. Laughlin, Minneapolis, Minn., and Etsuo Watanabe, Seki-shi, Japan, assignors to Arthur Salm Inc., Chicago, Ill.
Filed Oct. 24, 1968, Ser. No. 770,219
Int. Cl. B26b *11/00*
U.S. Cl. 7—11 **8 Claims**

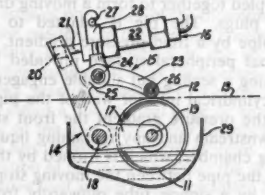
A pocket-sized multiple tool implement, the described embodiments comprising a number of tools resiliently biased by

an integral spring, and disposed between two plates of differing shape which cooperate to form finger recesses on one side of said implement, and comprising an assembly of tools



disposed between two plates, one of which is substantially square and the other of which has corners defining acute angles for mounting and exposing said tools.

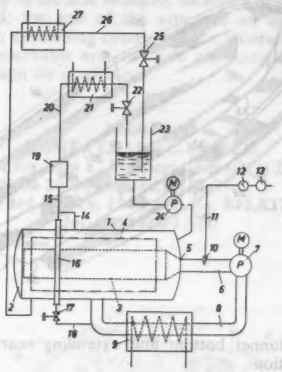
3,600,730
PRINTING OF MOVING YARNS
Raymond Victor Evans, Blackburn, England, assignor to Singer-Cobble Limited, Blackburn, England
Filed Oct. 10, 1969, Ser. No. 865,271
Claims priority, application Great Britain, Oct. 22, 1968, 50061/68
Int. Cl. B05c *1/08*
U.S. Cl. 8—149 **24 Claims**



The invention concerns a method of and an apparatus for applying dyestuffs to yarns at spaced intervals therealong whereby opposed cooperating members act on the yarn simultaneously from opposite sides thereof, the members each being moved towards the yarn so as to make contact therewith. The invention is of particular use in the selective application of a range of dyestuffs to a moving yarn at intervals therealong and according to a predetermined pattern, a plurality of groups of cooperating members being arranged in succession in the direction of yarn movement and the individual groups being separately actuable as required to give the said pattern.

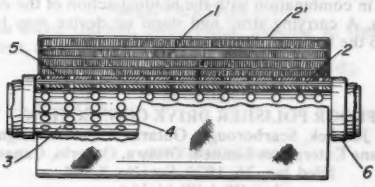
3,600,731
METHOD FOR TREATING TEXTILES
Niels Rudolf Bergholtz, Kinna, Sweden, assignor to Ludvig Svensson (Holland) N.V., Amsterdam, Netherlands
Filed Dec. 3, 1968, Ser. No. 780,805
Claims priority, application Sweden, Dec. 13, 1967, 17,133/67
Int. Cl. B05c *8/02*; **D06f** *17/02*
U.S. Cl. 8—149.1 **10 Claims**

In a method for treating textile materials and in particular in a method of beam-dyeing fabrics, a pressurized gas in a finely divided state is introduced into the treating liquid in a ratio of 0.1–10 liters per minute for every 10,000 liters per minute of treating liquid. The size of the gas bubbles are maintained small enough so that they enter between and separate the filaments of the textile material. These gas bubbles, and the treating liquid, are forced through the textile



material by a pump, and the surplus gas is removed from the top of the container housing the textile material.

3,600,732
BEAM-DYEING METHOD FOR PILE FABRICS CONTAINING ACRYLIC FIBER PILE
Genichi Hayashi; Tomoji Okubo, Okayama; Koshin Miyamoto, Toyonaka; Masatake Masuda, Okayama, and Syozo Shigita, Hirakata, all of, Japan, assignors to American Cyanamid Company, Stamford, Conn.
Filed Feb. 27, 1970, Ser. No. 14,921
Claims priority, application Japan, Mar. 5, 1969, 44/17122
Int. Cl. B05c *8/02*
U.S. Cl. 8—154 **1 Claim**

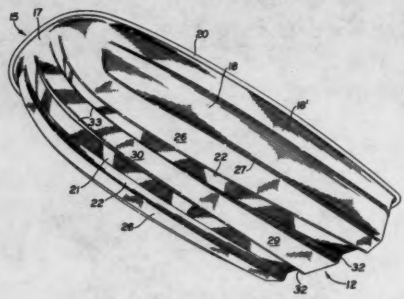


The present invention discloses a beam-dyeing process for pile fabrics having a pile of acrylic fibers involving use of a perforated plate of triangular cross section to eliminate winding irregularities and maintenance of specific winding density and volume rate of flow of dye liquor during dyeing.

3,600,733
PLANING BOAT HULL
Hangwind F. Lippisch, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Mar. 18, 1970, Ser. No. 20,571
Int. Cl. B63b *3/00*
U.S. Cl. 9—6 **14 Claims**

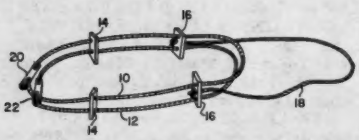
A planing type boat hull for maintaining a substantially constant trim angle throughout a slow to moderate speed range, said hull having a flat-bottomed central longitudinal tunnel with its sidewalls tapering outwardly from bow to stern to gradually increase the tunnel width, and a central lifting surface extending longitudinally throughout said tunnel, said lifting surface being inclined to the tunnel bottom to

form a channel extending forwardly of the medial portion thereof and forming an inclined plane projecting downwardly



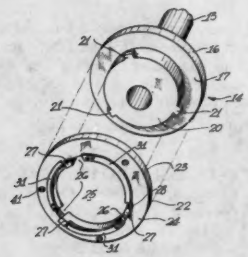
from the tunnel bottom and extending rearwardly of the medial portion.

3,600,734
BOOT-CARRYING DEVICE
Paul Pollinger, 210 Pine Road, Edgeworth, Pa.
Filed Dec. 18, 1969, Ser. No. 886,265
Int. Cl. A43d *5/00*
U.S. Cl. 12—120.5 **7 Claims**



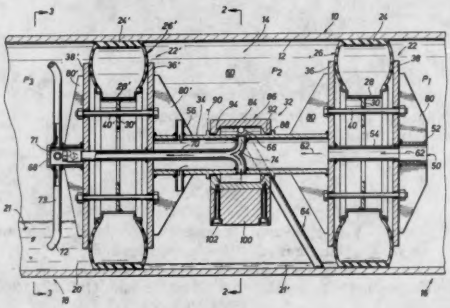
A device for securing and transporting boots comprising two elastic members which engage the terminal portions of the boots. The elastic members are linked to secure the boots together in combination with the holding action of the elastic members. A carrying strap and stand up device may be attached to the basic structure.

3,600,735
FLOOR POLISHER DRIVE CONNECTION
Bohumil Jerabek, Scarborough, Ontario, Canada, assignor to Dustbane Enterprises Limited, Ottawa, Ontario, Canada
Filed Jan. 26, 1970, Ser. No. 5,828
Int. Cl. A47l *11/164*
U.S. Cl. 15—49 R **11 Claims**



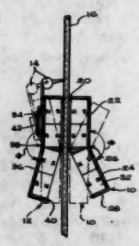
A drive connection for a floor polisher which permits ready removal from an attachment of brush units to the vertical shaft driven by the motor. The drive connection includes an annular plate element, which is secured to the brush unit, the plate element being adapted to be locked against a circular flange carried by the shaft, the shaft having lugs which pass through radially extending recesses in the annular plate element and turn in behind the annular plate element. On its rear face, the annular plate element has lug engaging ramps which terminate at lug abutments, the ramps being formed by flexible strips which are normally held away from the rear face adjacent the abutments by urethane plugs received in bores under the flexible strips.

3,600,736
PRESSURIZED PIPELINE PIGS
James Calley Smith, Beaumont, Tex., and Marvin Dewy Powers, 6060 Skyline Drive, Apt. 14, Houston, Tex., assignor by said Smith to said Powers
Filed Apr. 10, 1969, Ser. No. 816,181
Int. Cl. B08b *9/04*
U.S. Cl. 15—104.06 R **14 Claims**



This invention relates to apparatus commonly known as pigs for removing liquids and solids from pipe lines. The pig includes at least two transverse stoppers or plugs spaced apart and coupled together to form a moving drying chamber between the plugs. The pig is adapted to be propelled through the pipe by a fluid pressure gradient. Each stopper has an external peripheral surface provided by a resilient material forming a sealing but slidable engagement with the surrounding cylindrical interior wall of the pipe. Under the influence of the pressure gradient the front stopper pushes the fluids downstream and any remaining liquids within the moving drying chamber, which is formed by the inner cylindrical wall of the pipe between the moving stoppers, become siphoned out by a siphon tube outwardly from the drying chamber in the direction of fluid flow.

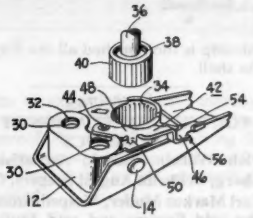
3,600,737
APPARATUS FOR CLEANING WINDOWS
Melvin Shore, 2720 W. Summerdale, Chicago, Ill.
Filed Jan. 5, 1970, Ser. No. 705
Int. Cl. A47l *1/08*
U.S. Cl. 15—104 **7 Claims**



A magnetic window cleaning apparatus including a master unit and a slave unit each having angularly disposed panels containing magnetic elements. The units are positioned on opposite sides of a windowpane and are magnetically coupled. The angled panels permit pivoting of a cleaning member mounted on one panel of the slave unit into and out

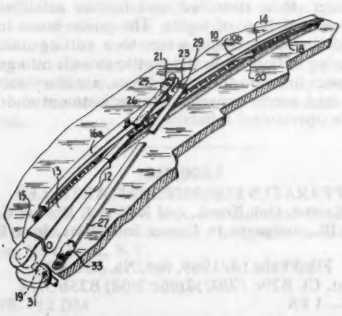
of contact with the windowpane by selective magnetic coupling between the respective panels of the two units due to pivoting of the master unit.

3,600,738
WINDSHIELD WIPER ARM
William C. Riester, Williamsville, and Raymond A. Deibel, West Falls, both of, N.Y., assignors to Trico Products Corporation, Buffalo, N.Y.
Continuation-in-part of application Ser. No. 747,763, July 5, 1968, now Patent No. 3,512,205. This application Feb. 25, 1970, Ser. No. 14,112
Int. Cl. B60a *1/04*
U.S. Cl. 15—250.34 6 Claims



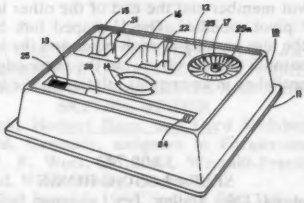
A windshield wiper arm includes a mounting head having a mounting head cover or retainer enveloping the mounting head and pivoted thereto. The retainer may be pivoted to the mounting head with portions of its sidewalls straddling the mounting head. A pair of compression springs recessed in the mounting head bear against the web of the mounting head cover to urge the arm against a windshield of a motor vehicle. Alternatively, an exposed mounting head may be employed wherein a tension spring spans the pivotal connection. A recess in the mounting head receives a pivot shaft drive burr in driving engagement. A latch pivoted to the arm head engages the edge of one flange of the mounting head cover in the installation position. In the latching position the latch underlies the drive burr to retain it in the recess. Additional forms of latches comprise a lever transversely slidable on the mounting head, manually slidable to a position where a portion engages either a longitudinal edge or an edge at the end of the flange of the arm head cover member or retainer to maintain the arm in an installation attitude. In the latching position a portion of the lever underlies the drive burr retaining it in the drive burr recess of the mounting head.

3,600,739
ARM AND BLADE ASSEMBLY
Peter Mower, Whitton, Twickenham, England, assignor to Trico Products Corporation, Buffalo, N.Y.
Filed Mar. 12, 1969, Ser. No. 806,454
Claims priority, application Great Britain, Mar. 13, 1968, 12251/68
Int. Cl. A47l *1/02*
U.S. Cl. 15—250.23 6 Claims



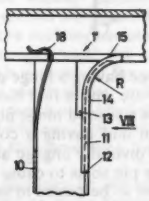
A wiper arm and drag link are pivoted about parallel axes on a pivot block at their blade carrying ends; at its other end the arm is mountable on a pivot shaft for oscillation therewith; the drag link is detachably anchored adjacent the pivot shaft for pivotal movement; the arm and drag link form a parallelogram linkage to oscillate the blade relative to the arm assembly as the arm assembly oscillates to and fro across a windshield; the end of the arm and an annular recess formed in an upstanding connecting pin secured to the blade provide a detachable arm to blade connection, the pin extending through the pivot block.

3,600,740
HOME CLEANING SYSTEM
Lois J. Ogier, c/o John E. Wagner, Attorney at Law, 1041 E. Green St., Suite 202, Pasadena, Calif.
Filed July 16, 1969, Ser. No. 842,837
Int. Cl. A46b *17/00*
U.S. Cl. 15—257 14 Claims



A combination of a telescoping handle, wet mop, broom, dust mop and a storage and carrying case for the same is disclosed. The heads are all interchangeable for use with the same handle and each has its own storage space in the carrier. The carrier is so dimensioned so as to allow storage on a normal kitchen shelf. One embodiment includes an internal cavity for use as a dust pan when the carrier is placed on the floor and in certain embodiments the stowage cavities for one or more of the heads is designed to act as a nonspillable pail and integral wringer.

3,600,741
APPARATUS FOR INSERTING HOOKS OR THE LIKE INTO CURTAIN RAILS
Louis Bays, Gurbru, Switzerland, assignor to Henri Egger, Bern, Switzerland, a part interest
Filed Feb. 20, 1969, Ser. No. 800,902
Int. Cl. A47h *13/12*
U.S. Cl. 16—87.8 3 Claims

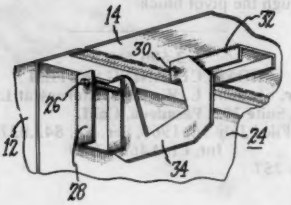


The unit has members for holding it in position on a fixed curtain rail and for providing movement of curtain glide hooks along its length and onto the fixed curtain rail.

3,600,742
CONCEALED DOUBLE-PIVOT HINGE FOR HINGED ENCLOSURE
Donald R. Barger, Hickory, N.C., assignor to General Electric Company
Filed July 7, 1969, Ser. No. 839,337
Int. Cl. E05d *3/06*
U.S. Cl. 16—164 2 Claims

A concealed double-pivot hinge is disclosed which will allow a hinged cover to be opened substantially 180° with

respect to a fixed portion of an enclosure. The hinge has one pivot member secured to the cover and a second pivot member secured to the fixed portion of the enclosure. The pivot pin on the cover is mounted slightly higher than the pivot pin on the fixed portion of the enclosure. At least one U-shaped link is provided having the end of one leg secured



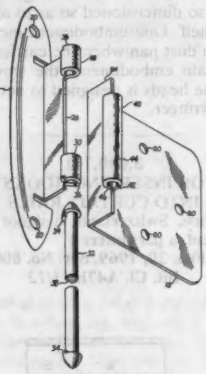
to one pivot member and the end of the other leg secured to the other pivot member. The U-shaped link has the outer edges of the legs parallel to each other and the inner edges of such leg parallel to each other, but the outer edges of the legs are nonparallel or in an angular relation to the inner edges of the legs.

3,600,743

SELF-CLOSING HINGE

Ray Meadows, Lake Dallas, Tex., assignor to David Allison Co., Inc., Woodbury, N.Y.

Filed Oct. 17, 1969, Ser. No. 867,191
Int. Cl. E05f *1/12*
U.S. Cl. 16—180 **2 Claims**



A self-closing hinge having a hinge pin with a flattened section mounted to rotate with a first hinge plate and a resilient sleeve positioned on a second hinge plate disposed concentrically about said pin and having a complementary flattened portion adapted to pivotally engage an edge of the flattened portion of the hinge pin so as to cause a door to shift towards a closed position and to be biased in said closed position.

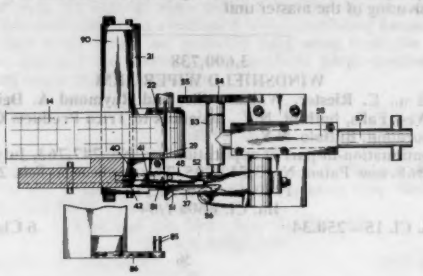
3,600,744

METHOD FOR SHELLING SHRIMPS

Hendrikus Gerhardus Muller, Hengeloo, Netherlands, assignor to N. V. Machinefabrick B & S Bedrijven v.d. Woerdt, Hengelo, Netherlands

Filed Mar. 14, 1969, Ser. No. 807,349
Claims priority, application Netherlands, Mar. 14, 1968, 6803635
Int. Cl. A22c *29/00*
U.S. Cl. 17—48 **4 Claims**

Cooked shrimps which are accordingly curved are shelled by accurately orienting them and transferring them to a shelling station where the body portion of the shell is gripped and the tail is straightened out and the shrimp is beheaded. The body and tail portions of the shell are then separated and the shrimp is pushed part way out of the gripped body portion of the shell. The tail portion of the shell is then stripped



off and the shrimp is then pushed all the way out of the body portion of the shell.

3,600,745

DEVICE FOR THE GRANULATION OF SYNTHETIC PLASTICS

Hans Heinrich Wilhelm Hench, Aschaffstrasse 75, 8750, Aschaffenburg; Wilhelm August Seegers, Obernburg, Main, and Leo Karl Markus Muller, Mespelbrunn, all of, Germany, assignor by said Seegers and said Muller to said Hench

Continuation-in-part of application Ser. No. 844,685, Apr. 7, 1969, which is a division of application Ser. No. 596,213, Nov. 22, 1962. This application July 22, 1970, Ser. No. 57,074
Claims priority, application Germany, Aug. 6, 1969, P 19 39 871.1
Int. Cl. B29f *3/00*
U.S. Cl. 18—1 B **37 Claims**

A device for the processing of synthetic plastics from a melt to solid granules of uniform size, the device including in succession an autoclave or extruder holding the melt, a casting unit and distributor with a plurality of discharge ducts and shutoff valves in the ducts, a partially mobile discharge unit with aligned injectors into which the liquid melt is discharged. In the injectors and subsequent guide hoses the strands of plastic are cooled for partial solidification by a first flow of water, then stretched and further solidified by a second, pressured flow of water. The guide hoses lead the strands and the surrounding water to a cutting unit where rapidly moving cutters chop the plastic strands into granules. Quick-connect links on the guide hoses, auxiliary valve control means and access provisions for adjustment and inspection provide operational reliability.

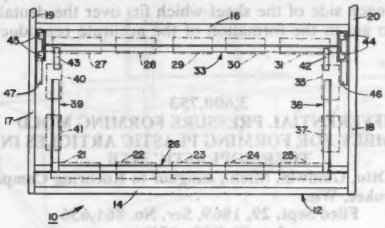
3,600,746

APPARATUS FOR MOLDING ARTICLES

Robert E. Kostur, Oak Brook, and Robert J. Brown, Chicago, both of, Ill., assignors to Comet Industries, Inc., Bensenville, Ill.

Filed Feb. 14, 1969, Ser. No. 799,456
Int. Cl. B29c *17/02*; D06c *3/08*; B25b *5/14*
U.S. Cl. 18—1 FS **7 Claims**

Articles are molded by heating a sheet of thermoformable material, stretching it during the heating of the sheet to prevent it from sagging, and then forming the heated material

into the article. The apparatus includes a clamping frame on which is slidably mounted a series of spaced-apart clamping assemblies for holding the marginal edges of the sheet to position it in a planar configuration. The clamping assemblies are moved farther apart by means of a series of piston

cylinder assemblies to expand the frame thereby stretching the heated sheet to maintain its coplanar configuration during the heating thereof. By controllably moving the clamping assemblies toward one another to contract the frame during the subsequent forming of the article, the wall thickness of the article is controlled.

3,600,747

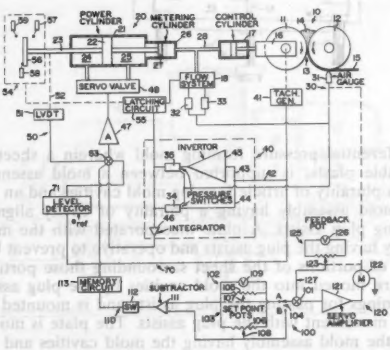
SYSTEM FOR CALENDER CONTROL

John R. McCarty, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed May 21, 1969, Ser. No. 826,627

Int. Cl. B29d *7/14*

U.S. Cl. 18—2 C **23 Claims**



An apparatus for controlling the thickness of material in a calender system. The sheeting roll gap is regulated by a plurality of hydraulic cylinders which are supplied with the precise amount of fluid by a servo valve. An error-measuring device can actuate, for example, a series of pressure switches or a potentiometer circuit to impose a signal on the servo valve which can be made proportional to the speed of the calender to compensate for a lag between the error-measuring device and the calender-positioning control. The apparatus can also be readily adapted to prevent pinch off of the material when the calender stops and to allow facile changes to be made in the specification of the material being calendered.

3,600,748

EXTRUSION DIE

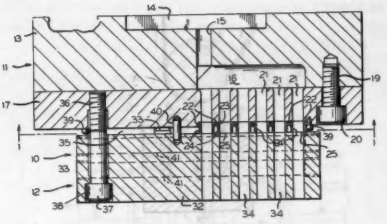
Knud Faehndrich, Fort Lee, N.J., and Edmund Lindner, Ludwigshafen am Rhine, Germany, assignors to BASF Corporation, New York, N.Y.

Filed May 1, 1969, Ser. No. 820,731

Int. Cl. B29f *3/00*

U.S. Cl. 18—12 DM **5 Claims**

Extrusion die embodying a heated rear section, a cooled front section with a plurality of extrusion orifices therein, passage means extending through the heated rear section for feeding thermoplastic polymer melt to the orifices, means



such as an air space insulating the cooled front section from the heated rear section, and thin-walled, melt-conducting ring gaskets bridging the space between said sections.

3,600,749

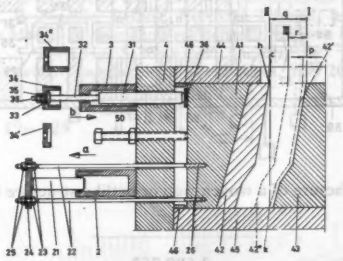
APPARATUS FOR PRESSURE-MOLDING OF ARTICLES FROM A NONFLOWING MIXTURE OF COMMINUTED ORGANIC FIBROUS MATERIALS AND A HEAT-SETTING BINDER

Edmund Munk; Herbert Haas, and Gerd Weinberg, all of Oberstenfeld, Germany, assignors to Furnier-und Sperrholzwerk J. F. Werz, Jr. K.G., Werzalit-Pressholzwerk, Oberstenfeld, Wurttemberg, Germany

Filed June 26, 1968, Ser. No. 740,318

Int. Cl. B30b *1/32*

U.S. Cl. 18—16 R **10 Claims**



A molding apparatus in which the forward and return strokes of the press punch are carried out in three steps so that, after one molding operation has been completed, the punch is retracted enough that the finished article may be removed from the mold without difficulty, thereafter the punch is advanced by a second movement for such a distance that the space between the molding surface of the punch and the core will have the proper width for receiving the exact amount of mixture which is required for compressing to the desired thickness of the mold article, and then finally by a third movement of the punch the filled-in mixture is compressed to the desired thickness of the mold article while the mold may be heated at the same time for curing the compressed material.

The application also discloses an apparatus in which the punch is operated by one or more hydraulic cylinders and pistons for fully retracting the punch and by one of more hydraulic cylinders and pistons for advancing the punch from the retracted position to the filling position.

3,600,750

EXTRUSION DIE OR NOZZLE

Joachim Stroszynski, Wiesbaden, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Dec. 27, 1967, Ser. No. 693,998

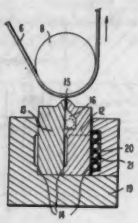
Claims priority, application Germany, Dec. 29, 1966, K 61046

Int. Cl. B29f *3/04*

U.S. Cl. 18—12 DS **10 Claims**

This disclosure relates to a slotted die comprising a pair of abutting cheek means having a discharge slot between them,

external means for supporting the cheek means, chamber means in the external means, and means for exerting pressure



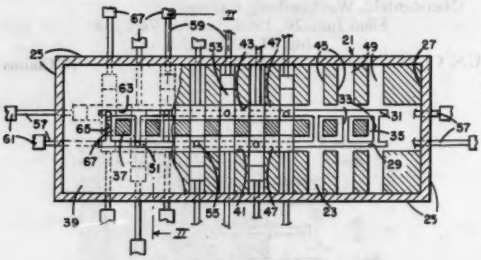
in the chamber means whereby the cheek means are urged together.

3,600,751

APPARATUS FOR EXTRUSION OF INTERLACED WEBS

Theodore H. Fairbanks, West Chester, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Filed Jan. 24, 1969, Ser. No. 793,731
Int. Cl. B29f *3/04*
U.S. Cl. 18—12 N **5 Claims**



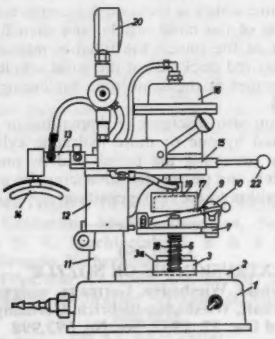
Manufacture of a woven web or netlike structure by extrusion.

3,600,752

DEVICE FOR MAKING DENTAL CASTING PATTERNS

Erich Kopp, 15 Panoramaweg, Wurttemberg, Pfalgrafenweiler, Germany

Division of Ser. No. 514,286, Dec. 16, 1965, Pat. No. 3,532,776. Filed Jan. 23, 1969, Ser. No. 817,595
Int. Cl. B29c *17/02*; **A61c** *13/02, 13/08*
U.S. Cl. 18—19 H **12 Claims**



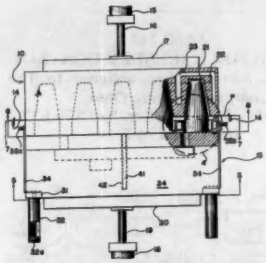
An apparatus for making casting patterns to be used in the casting of articles of manufacture having a thin wall thickness in at least a portion thereof is provided. The apparatus comprises means for supporting at least one dental die model of at least one tooth form from an individual. The apparatus also includes a means to support a sheet of thermoplastic material and means for heating the sheet of thermoplastic material to a softened condition. A means is provided to apply the softened or plasticized sheet to the dental die model thereby forming an accurate reproduction thereof. The apparatus includes means to effect a different air pressure on each side of the sheet which fits over the dental die model to aid in the formation of the accurate reproduction thereof.

3,600,753

DIFFERENTIAL PRESSURE FORMING MOLD ASSEMBLY FOR FORMING PLASTIC ARTICLES IN A THERMOPLASTIC WEB

Melvin Otto, Gladwin, Mich., assignor to Koehring Company, Milwaukee, Wis.

Filed Sept. 29, 1969, Ser. No. 861,636
Int. Cl. B29c *17/04*
U.S. Cl. 18—19 F **9 Claims**



A differential pressure forming mold wherein a sheet of deformable plastic is supported between a mold assembly having a plurality of article forming mold cavities and an opposed mold assembly having a plurality of cavity aligned, projecting plug assists. A plate incorporated with the mold assembly having the plug assists and operative to prevent ballooning of portions of the sheet surrounding those portions which are moved into the mold cavities by the plug assists has openings for passing the plug assists and is mounted for relative movement with the plug assists. The plate is moved toward the mold assembly having the mold cavities and engages the mold assembly having the mold cavities to clamp the edges of the plastic sheet thereto, prior to the time the plug assists are moved into the cavities to stretch the sheet and mechanically move portions of the sheet into the mold cavities. Thereafter a differential pressure condition is created to move the sheet portions finally into intimate engagement with the mold cavities.

3,600,754

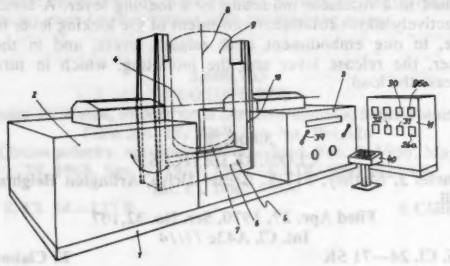
ROTATIONAL CASTING APPARATUS

Anton Johannes Vox, Ruit, Germany, assignor to Thermovox G.m.b.H., Kunststoffmaschinen, Ruit, Germany

Filed Mar. 17, 1969, Ser. No. 807,812
Claims priority, application Germany, Mar. 20, 1968, P 17 78 011.9
Int. Cl. B29c *5/00*
U.S. Cl. 18—26 RR **9 Claims**

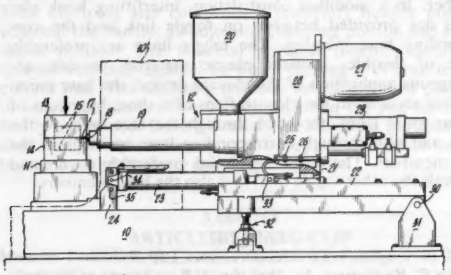
A rotational casting apparatus has drive means for rotating a hollow mold about two mutually transverse axes. The rotation about at least one of these axes can be periodically reversed by a control apparatus to rock or oscillate the mold through an angle of less than 360°. This control system includes a double-acting pneumatic cylinder connected via a rack to a control pinion of a reversible, adjustable hydraulic motor connected to the mold. Switches actuatable by the rack control reversal of this cylinder via pneumatic valves. A

stop switch actuatable by the yoke carrying the mold can stop the mold at a predetermined angular setting for rocking



while a timer controls the sequence of operation of the apparatus.

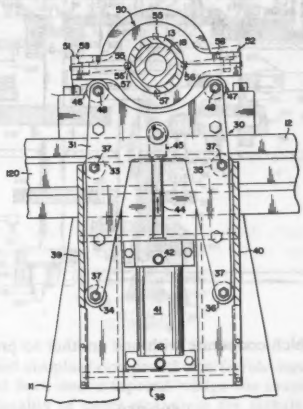
3,600,755
PLASTIC INJECTION-MOLDING MACHINE WITH VARIABLE SPRUE-HEIGHT ADJUSTMENT
Francis W. Cook, Jr., Newington, Conn., assignor to The New Britain Machine Company, New Britain, Conn.
Filed May 15, 1969, Ser. No. 824,845
Int. Cl. B29f *1/00*
U.S. Cl. 18—30 JA **4 Claims**



In a plastics injection-molding machine, the injector is reciprocatably slidable on a platform for engaging the injector nozzle with the sprue hole of a mold on the machine. One end of the platform is pivoted for jacked vertical movement of the other end, to adjust the vertical position of the injector nozzle. Such adjustment accommodates the injector nozzle to the elevation of the sprue hole, for successive molds having sprue holes at different heights. The portion of the nozzle engaging the sprue hole is generally spherical for making universally good contact therewith, throughout the range of adjustably available angular positions of the injector relative to the mold.

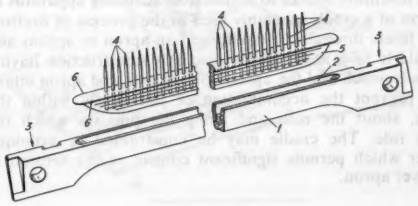
3,600,756
INDEXING AND BRAKE APPARATUS FOR ROTATIONAL CASTING MACHINES
Alden C. Boyce, Stow, Ohio, assignor to Rota-Matic, Inc., Cuyahoga Falls, Ohio
Filed Feb. 3, 1969, Ser. No. 795,899
Int. Cl. B29c *5/04*
U.S. Cl. 18—26 RR **6 Claims**

In a rotational casting machine, a stop means is provided adjacent a support arm used in the casting machine for support of and rotation of the mold-carrying means, and such stop means is movable to and from engagement with the support arm. Power means are present to force the stop means to move to engage the support arm to prevent rotation



thereof and to control the stop position of molds operatively carried by the support arm.

3,600,757
FALLERS FOR TEXTILE MACHINES
John K. P. Mackie, Belfast, Northern Ireland, assignor to James Mackie & Sons Limited, Belfast, Northern Ireland
Filed May 5, 1969, Ser. No. 821,716
Claims priority, application Great Britain, May 20, 1968, 23940/68
Int. Cl. D01g *19/00*
U.S. Cl. 19—129 **5 Claims**

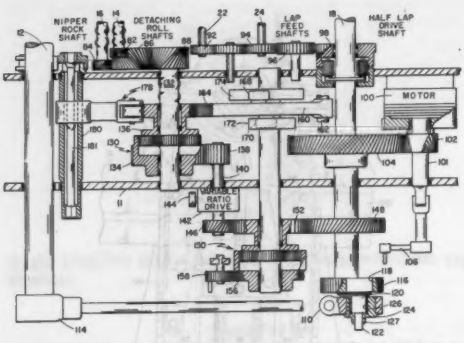


A faller for a textile machine of the kind in which the pins are mounted in an insert of synthetic plastic held within a slot in the body of the faller by means of adhesive is improved by the formation of the insert with a laterally extending flange at each side so that when the insert is fitted in position the flanges extend over the upper surface of the faller and thus prevent excess adhesive flowing over the surface of the insert between the pins.

3,600,758
TEXTILE COMBER NIPPER DRIVE
John Clifford VonKaenel; Gordon Campbell Anderson, and Stephen David Seymore, Jr., all of Clemson, S.C., assignors to Maremont Corporation, Chicago, Ill.
Division of Ser. No. 585,605, Oct. 10, 1966, Pat. No. 3,479,699
Filed May 2, 1969, Ser. No. 841,652
Int. Cl. D01g *19/16*
U.S. Cl. 19—225 **6 Claims**

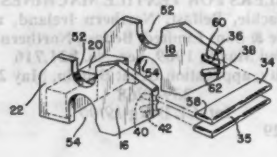
This invention relates to a nipper assembly drive having two cooperating eccentric elements which makes it possible to establish an adjustable predetermined stroke of the nipper assembly from a generally unchanged back position of the

nipper assembly. This adjustment is made particularly convenient by the utilization of indicia for each of the eccentric



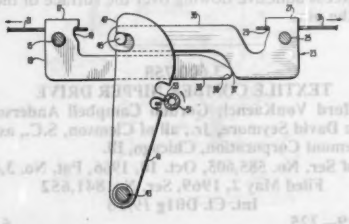
members which cooperate with one another to provide such adjustment.

3,600,759
DRAFTING APRON CRADLE ASSEMBLY
Peter F. Grishin, P.O. Box 250, Sanford, N.C.
Continuation of Ser. No. 669,519, Sept. 21, 1967
Filed Mar. 24, 1969, Ser. No. 814,882
Int. Cl. D01h *5/88*
U.S. Cl. 19—255 **5 Claims**



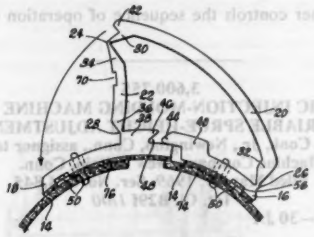
This invention relates to textile fiber handling apparatus in the form of a cradle assembly used in the process of drafting textile fibers through the medium of an apron or aprons and particularly to a novel cradle assembly construction having side walls which seal the apron-holding pins and apron interior to prevent the accumulation of lint or fly within the aprons, about the rolls and along the pins on which the aprons ride. The cradle may be constructed in a unique manner which permits significant control of the tension in the lower apron.

3,600,760
RELEASE MECHANISM
Ralph G. Eshleman, Lancaster, Pa., assignor to Hamilton Watch Company, Lancaster, Pa.
Filed Dec. 11, 1969, Ser. No. 884,219
Int. Cl. A43c *11/14*; **G04b** *33/00*
U.S. Cl. 24—68 R **11 Claims**



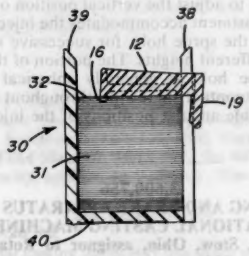
This invention relates to a time-delay release mechanism for restraining and releasing large loads. For example, as in the case of a steel banding strap used to hold a large package together. The invention, in one embodiment, includes adjacent, rotatably mounted release levers which distally engage the ends of the strap at the mounting thereof. The release levers are connected by a rotatably mounted locking lever. In a second embodiment, a single release lever, adapted to engage one end of a fixed strap, is resiliently attached to a rotatable mounting by a locking lever. A timer selectively allows rotational movement of the locking lever to free, in one embodiment both release levers, and in the other, the release lever and the mounting, which in turn release the load.

3,600,761
CLOSURE DEVICES
Charles J. Mathey, 517 S. Reuter Drive, Arlington Heights, Ill.
Filed Apr. 27, 1970, Ser. No. 32,107
Int. Cl. A43c *11/14*
U.S. Cl. 24—71 SK **22 Claims**



The closure device comprises two toggle links connected between base members. Hinge elements, preferably integral with the toggle links, are connected between the two toggle links, and also between each link and the corresponding member. In a modified construction, interfitting hook elements are provided between on toggle link and the corresponding base member. The toggle links are preferably made of flexible, resilient plastic material. In one advantageous application of the closure device, the base members are secured to the closure flaps of a shoe, by means of one or more laces, threaded through the lace holes in the shoe, and also through corresponding lace openings in the base members. The outer toggle link preferably covers and conceals the other toggle link, and also the base members.

3,600,762
WEB RETENTION CLIP
Arthur C. Rissberger, Jr., Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 23, 1970, Ser. No. 21,832
Int. Cl. A44b *21/00*; **B65d** *85/672*
U.S. Cl. 24—81 FC **5 Claims**



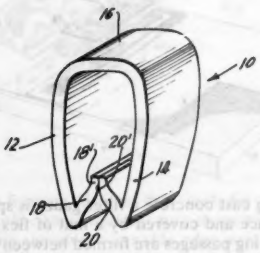
A clip for the retention of a web wound upon a reel having a flange with radially extending slot for slidable movement of the clip along the flange. The clip includes a pressure bearing means having the general shape of a frustum of a wedge. This permits first contact to be made at the thick end of the wedge and through resilient cantilevered action, web contact along the length of the pressure bearing means is ensured.

The clip has gripping means which includes a friction fit of the flange width. The gripping means also includes a pair of resilient shoulders which cooperate with the thin end of the wedge for gripping the flange to maintain the position of the clip on the flange. Gripping action and web retention are further enchanced by having a neck portion resiliently couple the pressure bearing means with the gripping means.

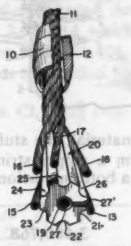
3,600,763
CLOTHES PEG
Heinz H. Welck, 94 Rue de la Servette, Geneva, Switzerland
Filed Jan. 28, 1969, Ser. No. 794,626
Claims priority, application Switzerland, Feb. 6, 1968, May 29, 1968, Nov. 1, 1968, 1902/68;8183/68;16427/68
Int. Cl. D06f *55/00*
U.S. Cl. 24—137 R **6 Claims**

A clothes peg moulded in one piece from thermoplastic material and comprising a handle with depending clamping arms which can be flexed apart to straddle a clothes line. Each clamping arm comprises a resiliently flexible portion adjacent the handle, an adjoining clamping portion and a terminal portion. The terminal portions together define a splayed entrance channel by which the peg is offered to the clothes line. The clamping portions define a ribbed passage in which the clothes line is received when the peg has been finally positioned. During flexure, the clamping portions are displaced from a position in which they subtend acute angles to one in which they are more nearly parallel.

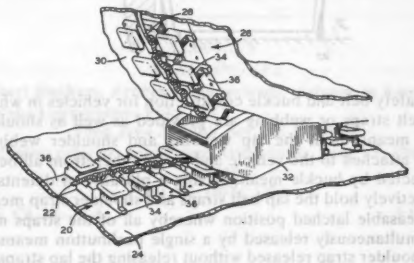
3,600,764
ARTICLE-HANGING CLIP
Monroe Froehlich, Jr., South Salem, N.Y., assignor to DHJ Industries, Inc., New York, N.Y.
Filed Oct. 16, 1969, Ser. No. 866,968
Int. Cl. D06f *55/00*
U.S. Cl. 24—137 R **3 Claims**



A clip for gripping and holding, in hanging fashion, articles such as garments which can be inexpensively produced by molding of plastic or other suitable material.

3,600,765
ROPE END COUPLING
Raymond R. Rovinsky, Wilkes-Barre, and Harry R. Gardner, Jr., Shavertown, both of, Pa., assignors to American Chain & Cable Company, Inc., Bridgeport, Conn.
Filed Dec. 27, 1968, Ser. No. 787,466
Int. Cl. F16g *11/02, 11/04*
U.S. Cl. 24—122.6 **11 Claims**

A rope end coupling composed of a ferrule having a conically shaped bore and a tapered wedge for securing a rope having a plurality of outer strands in the ferrule bore. The tapered wedge includes a plurality of grooves in its outer surface to receive some or all of the strands of the rope and tightly hold them against the ferrule.

3,600,766
STRINGERS FOR FASTENERS
Herbert Alberts, Rua Capitao Luiz Ramos 312, Sao Paulo, Brazil
Filed July 28, 1969, Ser. No. 845,455
Claims priority, application Brazil, Aug. 1, 1968, 201575
Int. Cl. A44b *19/08, 19/10*
U.S. Cl. 24—205.12 **9 Claims**

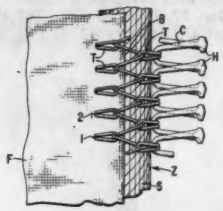


A plastic fastener comprises two stringers. Each stringer includes a plurality of longitudinally spaced plastic engaging elements. The engaging elements of each stringer are interconnected via a plastic strip in which are embedded threads whereby each stringer is a unitary structure of molded plastic material. Each engaging element of each stringer extends transverse to the axis of the stringer and is provided with teeth or hooks at its both ends for meshing with engaging elements of the other stringer.

3,600,767
COIL-TYPE ZIPPER STRINGER
Roy M. Cowdrey, Lake Hiawatha; Robert B. Brauch, Wayne, N.J., and Anne C. Clapp, Siler City, N.C., assignors to The Singer Company, New York, N.Y.
Filed June 17, 1969, Ser. No. 833,972
Int. Cl. A44b *19/12, 19/40*
U.S. Cl. 24—205.16 **1 Claim**

A coil-type zipper stringer is disclosed which a home sewer is enabled to produce directly on a material using a family-type zigzag sewing machine. The material is positioned under and to one side of a stuffer cord. A zipper coil is positioned in parallel contact with the other side of the stuffer cord so that the total throw of the zigzag sewing machine needle dur-

ing one stitch sequence encompasses from the material on the one side of the stuffer cord to an inside loop of the zipper coil on the other side of the stuffer cord, whereby the zigzag



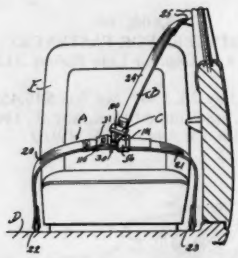
stitching locks the material, the stuffer cord and the zipper coil together to form a zipper stringer, wherein the stitch crossover occurs on a bottom portion of the zipper stringer.

3,600,768

INTEGRAL THREE-POINT SAFETY BUCKLE

Louis Romanzi, Jr., Brighton Township, and William J. Eubank, Livonia, both of, Mich., assignors to Irvin Industries Inc., Lexington, Ky.

Filed Feb. 26, 1969, Ser. No. 802,557
Int. Cl. A44b *17/00*
U.S. Cl. 24—205.17 **12 Claims**



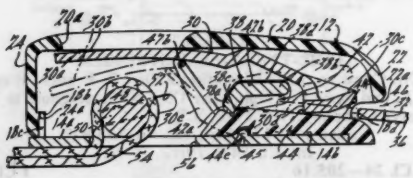
A safety belt and buckle construction for vehicles in which lap belt straps or webbing are provided as well as shoulder strap means, both the lap webbing and shoulder webbing being attached to the vehicle and remote therefrom all being connected by buckle means having a plurality of detents to respectively hold the lap belt straps and shoulder strap means in releasable latched position whereby all of the straps may be simultaneously released by a single pushbutton means or the shoulder strap released without releasing the lap straps.

3,600,769

SEAT BELT BUCKLE

William V. Bachmann, St. Clair Shores, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed July 14, 1969, Ser. No. 841,334
Int. Cl. A44b *11/26*
U.S. Cl. 24—230 A **10 Claims**



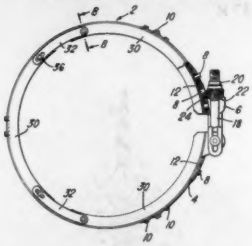
A seat belt buckle of the push button type wherein a lever member is pivoted intermediate its ends within the buckle housing with one end of the lever underlying an opening in the top wall of the housing to permit engagement of that end of the lever by the finger of an operator, while the other end of the lever defines a detent structure which releasably engages the tip end or blade of the mating belt assembly.

3,600,770

CIRCULAR CLAMPS

Horace P. Halling, Leverstock Green, England, assignor to Avica Equipment Limited, Hemel Hempstead, Hartfordshire, England

Filed Oct. 20, 1969, Ser. No. 867,572
Claims priority, application Great Britain, Apr. 29, 1969, 21874/69
Int. Cl. B65d *63/06*
U.S. Cl. 24—279 **11 Claims**



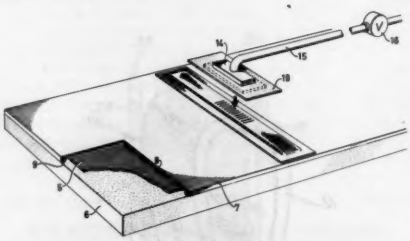
The invention relates to a circular clamp for clamping flanges, which comprises a body having a clamping strap supporting interiorly thereof at least one flange engaging member; and at least two lugs which are pulled together by a nut and bolt to tighten the body around the flanges, each lug being fast with a reinforced free end portion of the clamping strap, and the bolt being pivotally attached to one of the lugs. There will be two lugs and one nut and bolt arrangement when the clamp is in the form of a split ring, and there will be four lugs and two nut and bolt arrangements when the clamp is in the form of two separate half circles. Usually the clamping strap will have pivotal flange-engaging members attached to its inner face, and the flanges to be joined are preferably V-flanges.

3,600,771

DEVICE FOR DRAINING NEWLY CAST CONCRETE BY VACUUM TREATMENT

Bror Dyrander, Nacka, Sweden, assignor to Tremix Aktiebolag, Nacka, Sweden

Filed July 11, 1969, Ser. No. 840,971
Claims priority, application Sweden, Aug. 1, 1968, Feb. 10, 1969, 10396/68;282/69
Int. Cl. E04g *21/06*
U.S. Cl. 25—1 F **7 Claims**



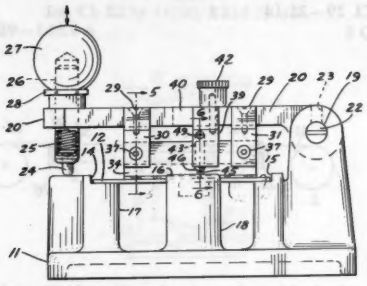
For draining cast concrete a filter gauze is spread over the concrete surface and covered by a mat of flexible rubber or plastics. Draining passages are formed between the gauze and the mat and connected to collecting spaces provided at the outside of the mat. Outlet ports from said collecting spaces cooperate with a nozzle connected to a movable suction conduit and dimensioned to cover all said outlet ports when applied manually in correct position against the exterior of the mat.

3,600,772

IMMUNOELECTROPHORESIS AGAR-GEL PUNCH

Walter Farris, 19193 Parkside, Detroit, Mich.

Filed Mar. 12, 1970, Ser. No. 19,035
Int. Cl. B28b 7/14
U.S. Cl. 25—105 6 Claims



An agar-gel punch and cutter for use in the separation of serum proteins by the practice of Immunoelectrophoresis.

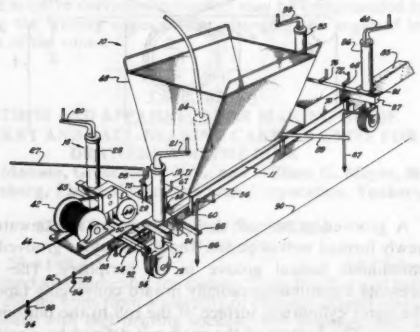
A particular combination and arrangement of elements, which includes a base for supporting agar-gel covered microscopic slides and a hinged top, which is provided with a multiplicity of depending resiliently mounted, adjustable punches, for making holes in the agar-gel, and a plurality of resiliently mounted pairs of spaced blades for forming troughs in the agar-gel, there being an adjustable, eccentric pivot between the base and top to permit the leveling of the top with respect to the slide, and there being an adjustable and resilient element between the base and the top to limit the relative movement when the parts are parallel.

3,600,773

CONCRETE-FORMING DEVICE

Leland J. Davis, 1409 N. Mar Les Drive, Santa Ana, Calif., and Paul T. Ogilvie, 1129 Orangegrove, Orange, Calif.

Filed Mar. 26, 1969, Ser. No. 810,645
Int. Cl. E01c 19/50
U.S. Cl. 25—118 W 9 Claims



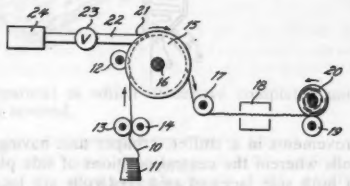
A concrete-forming device that includes an elongated open-ended mold complementary to a shape to be produced, the mold having movable lower side edge portions resiliently biased downwardly to accommodate surface irregularities for confining the concrete in the mold, with adjustable means being provided for obtaining further movement of the lower side edge portions. A hopper communicates with the upper portion of the mold for receiving concrete to flow by gravity into the mold, and a vibrator is introduced into the concrete to cause it to fill the entire section of the mold. Steerable wheels are at the front of the unit, which is powered by an electric motor winding a cable to pull the machine forwardly.

3,600,774

APPARATUS FOR STRAND TREATMENT

Charles A. McClure, R. D. 2, Malvern, Pa.

Continuation-in-part of application Ser. No. 714,171, Mar. 19, 1968, now Pat. No. 3,500,516, dated Mar. 17, 1970, which is a continuation-in-part of application Ser. No. 543,947, Apr. 20, 1966, now Pat. No. 3,374,514, which is a continuation-in-part of application Ser. No. 686,424, Nov. 29, 1967, now Pat. No. 3,457,613. This application Mar. 13, 1970, Ser. No. 19,440
Int. Cl. D02g 1/00
U.S. Cl. 28—1.2 15 Claims



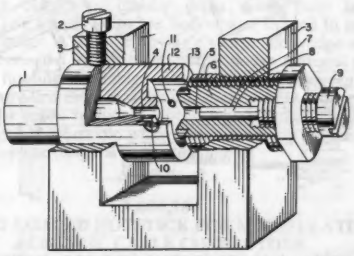
Strand-treating apparatus is provided to draw and crimp textile strands, including means for cooling the strand-supporting surface of a draw roll and means for directing hot fluid, preferably obliquely, onto one side of a textile strand so supported, the opposite side of which is maintained relatively cool on the cooled roll surface. Means are provided for so treating one monofilament or multifilament strand or many individual strand "ends" lying alongside one another.

3,600,775

TANGLING JET

Robert Sluijters, Arnheim, Netherlands, assignor to American Enka Corporation, Enka, N.C.

Filed June 3, 1969, Ser. No. 829,894
Claims priority, application Netherlands, June 13, 1968, 6808286
Int. Cl. D02g 3/00
U.S. Cl. 28—1.4 1 Claim

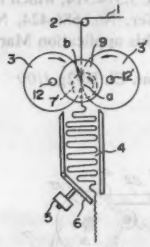


A tangling jet having a nozzle member and a resonance chamber member positioned coaxially therewith is improved by adding a tubular body concentrically around the nozzle member and the resonance chamber member, and by providing thread guide openings in the tubular body so that a thread bundle passing therethrough intersects the common centerline of the nozzle and resonance chamber members.

3,600,776
STUFFER CRIMPER

Sokichi Aoki, and Yoshinobu Murakami, both of Matsuyamashi, Japan, assignors to Teijin Limited, Kita-ku, Osaka, Japan

Filed Nov. 26, 1969, Ser. No. 880,130
Int. Cl. D029 1/12
U.S. Cl. 28—1.6 1 Claim

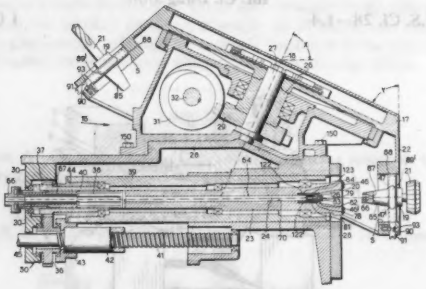


Improvements in a stuffer, crimper unit having a pair of feed rolls wherein the central positions of side plates urged against both side faces of said feed rolls are located apart from the nip of the feed rolls eccentrically with respect to the line connecting centers of both feed rolls and line perpendicular thereto and said side plates are held in position in holders so that they are freely rotatable to prevent uneven abrasion of the side plates and increase the efficiency of the apparatus.

3,600,777
TOOL FEEDING DEVICE FOR MACHINE TOOLS

Giorgio Ollearo, and Elio Pagella, both of Ivera, Italy, assignors to Ing. C. Olivette and C., S.p.A., Ivrea (Turin), Italy

Filed July 29, 1968, Ser. No. 748,402
Claims priority, application Italy, July 29, 1967, 52600 A/67
Int. Cl. B23b 39/00, 7/04
U.S. Cl. 29—26 4 Claims

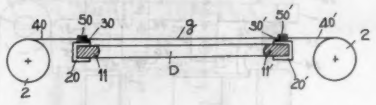


A machine tool arrangement having a device for controlling the chuck thereof, comprising a base, a headstock mounted thereon, and a sleeve axially slideable within the headstock, the chuck being rotatable within the sleeve. The chuck is arranged to be rotatable by a shaft disposed parallel and noncoaxially thereto by a train of gear wheels displaceable together with the sleeve, relative to the shaft. The sleeve is arranged to be shifted axially by means of a mechanism arranged parallel and noncoaxially with the shaft to apply rotational force to the chuck in a manner such that the torsional deformation thereof remains constant throughout the entire chuck stroke.

3,600,778
METHOD OF MANUFACTURING THE FOCUSING GRIDS OF COLOR TELEVISION TUBES

Andre Martin, Paris, France, assignor to Thomson-CSF

Filed Jan. 28, 1969, Ser. No. 794,597
Claims priority, application France, Feb. 1, 1968, 138,334
Int. Cl. H01j 9/00
U.S. Cl. 29—25.14 3 Claims



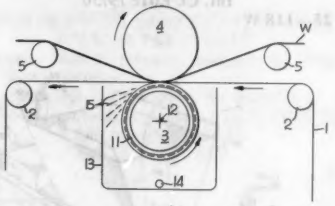
A method of manufacturing focusing grids for color television tubes, consisting in first producing a sheet of wires having the desired accuracy in terms of pitch and flatness, on a prismatic drum the corners of which are constituted by precision screws in the threads of which the wires are laid. The wires are then preliminary fixed to channel irons carried by the side members of a precision frame.

A substantial economy is achieved by using the same frame for manufacturing a great number of grids. Only the channel iron need to be changed.

3,600,779
PRESS ROLL WITH TAPERED GROOVES

Donald B. DeNoyer, Beloit, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Dec. 12, 1969, Ser. No. 884,490
Int. Cl. B21b 27/02
U.S. Cl. 29—121 A 5 Claims



A grooved press roll shell is disclosed for dewatering a newly formed web of paper. The shell may be grooved with a continuous helical groove in its periphery. The groove presents a continuous radially inward converging taper from the outer cylindrical surface of the roll to the bottom of the groove. The bottom of the groove is defined by a cylindrical surface concentric to the outer cylindrical surface of the roll. The groove tapers inwardly for a distance which is preferably more than twice the width of the groove at the outer periphery of the roll, to define an included angle preferably in a range of from 8° to 10° and a bottom surface between one-half and two-thirds of the width of the groove at the outer periphery of the roll. The continuous taper of the flat bottom groove from the roll surface radially inward to such depth provides desired dewatering without an undesired counter pressure of water trapped in the groove and without the groove become clogged or plugged with felt hair or fiber.

3,600,780

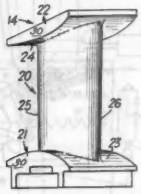
METHOD FOR IMPROVING BEARING WEAR

Dominick F. Dolce, and Walter G. Poland, both of Sandusky, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of application Ser. No. 810,367, Mar. 25, 1969, now abandoned. This application Aug. 7, 1970, Ser. No. 62,167

Int. Cl. B23p *11/00*; B21d *53/10*

U.S. Cl. 29—148.4 A 5 Claims



A method of improving machine bearing wear wherein components of a rotating bearing assembly are immersed in oil and heated to an approximate temperature of 400° F in an air atmosphere from 60 to 90 minutes. The bearing components are immersed in a hydrocarbon mineral lubricating oil, the excess oil is removed leaving the components coated with an adherent film, and the bearings are then heated to form a varnish film from the adherent film which when placed in an operative environment with normal lubrication provides longer wear characteristics.

3,600,781

METHOD OF PRODUCING A STATOR VANE FOR A GAS TURBINE ENGINE

Malcolm Ralph Scott, Shelton Lock, Derby, England, assignor to Rolls-Royce Limited, Derby Derbyshire, England

Filed Mar. 6, 1969, Ser. No. 804,964

Claims priority, application Great Britain, Mar. 8, 1968, 11427/68

Int. Cl. B21k *3/04*; B23p *15/02*, *15/04*

U.S. Cl. 29—156.8 B 4 Claims

A method of making stator vanes for a gas turbine engine comprises forming the radially outer surface of the vane platform, and/or the radially inner surface of the shroud of the vane, with a convex curvature, and thereafter reducing this convex curvature to a desired value such that the throat area defined between adjacent like stator vanes has the design value. Excessive curvature reduction may be compensated by bending the trailing edges and/or changing the angle of incidence of the vanes.

3,600,782

METHOD AND APPARATUS FOR MAKING GUIDE BRACKET AND BALL-BEARING CARRIER UNITS FOR DRAWERS AND THE LIKE

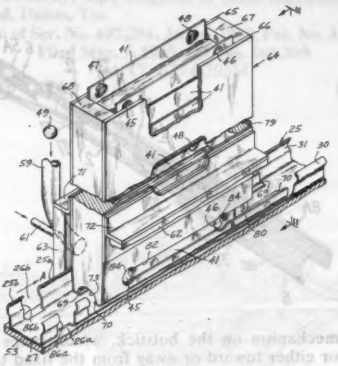
Morris Manson, Great Neck, N.Y., and William G. Meyer, St. Petersburg, Fla., assignors to Corax Corporation, Yonkers, N.Y.

Filed Oct. 20, 1969, Ser. No. 867,506

Int. Cl. B23p *11/00*, *19/04*

U.S. Cl. 29—148.4 A 15 Claims

A method and apparatus for making guide bracket and ball bearing carrier units from a plurality of channel-shaped carrier members with ball bearing sockets, ball bearings, and a longitudinally moving channel-shaped guide bracket strip comprising a plurality of guide bracket sections defined by longitudinally spaced notched portions. The carrier members are sequentially fed to a working position in an assembling station in timed relation to the operative forward movement of the strip, each operatively positioned carrier member being held against movement while in said working position, the guide bracket strip uninterruptedly moving through said assembling station while ball bearings are being fed to positions between the sockets in the carrier member legs and the flanking legs of the moving guide bracket strip, thereby effecting a rollable interengagement of the carrier member and the adjacent coacting guide bracket section. The carrier member is then released from its said assembling position, and the interengaged members are moved forwardly to cutting apparatus at which successive completed units are operatively severed.



3,600,783

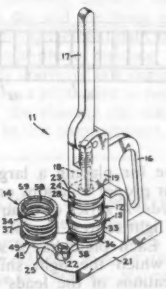
BADGE PRESS

Jack Krinsky, 672 Grand Ave., Long Beach, Calif., and George Pavitch, 9289 Cedartree Road, Downey, Calif.

Filed Dec. 3, 1969, Ser. No. 881,658

Int. Cl. B23p *19/00*, *19/04*

U.S. Cl. 29—200 B 11 Claims



The invention is a press utilizing transfer dies for rapidly assembling badges or similar items made from laminar material. The transfer dies are hollow and shaped to register with each other. A first die having a sharpened wedge-shaped edge performs the functions of cutting badge material to size and then holding the badge material in its hollow interior. Second and third dies, arranged to successively register with the first die, each include a piston which pushes cut badge material into the first die where the material is accumulated until a complete badge is formed.

3,600,784

SPRING-LOADED HOTSTICK FOR MANIPULATING ELECTRIC CABLE CONNECTORS

Richard F. Propst, Lexington, Ky., and Norman M. Neagle, Hickory, N.C., assignors to General Electric Company

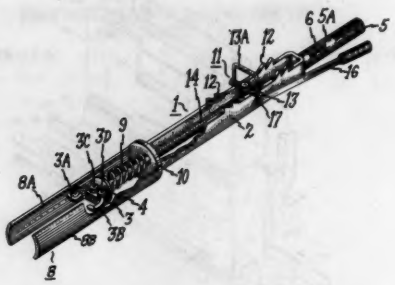
Filed Dec. 2, 1969, Ser. No. 881,564

Int. Cl. H01r *43/00*; B25b *27/02*

U.S. Cl. 29—203 H 10 Claims

A hotstick for manipulating electric cable connectors is provided with a manually controlled, spring-actuated mechanism that makes the speed of circuit interrupting and circuit making operations independent of the speed at which a lineman moves the hotstick. To perform either a load making or load breaking function by connecting or disconnecting a cable connector module to, or from, a fixed terminal, a

manually operated trigger on the hotstick is actuated after the hotstick is moved to position the module with respect to the terminal. Thus actuated, the trigger releases a spring



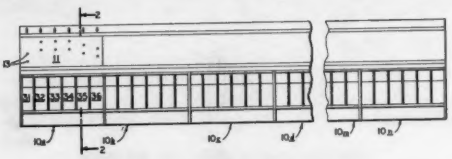
loaded mechanism on the hotstick, which snaps the cable connector either toward or away from the fixed terminal to make or break the circuit with a minimum of arcing.

3,600,785

CIRCUIT BOARD ASSEMBLY LINE

Leslie J. Cook, 2537 Regent St., Berkeley, Calif., and John E. Lindberg, 1211 Upper Happy Valley Road, Lafayette, Calif.

Filed Oct. 16, 1969, Ser. No. 866,855
Int. Cl. H05k *13/04;* **B23q** *17/00;* **H05k** *3/30*
U.S. Cl. 29—203 B **4 Claims**



An assembly line for placing a large number of circuit components at their proper locations on a series of identical printed circuit boards. A series of opaque support plates are supported above a light source, one plate for each station in the assembly line. Each plate has a series of windows or openings through which the light shines, and these correspond to the locations of the leads for the circuit components to be assembled to the circuit board at that station. In front of the support board is a series of bins, one for each component, and located generally beneath their respective openings. At each station, the components to be assembled are spaced rather widely apart across the board. Above the support board, one of each component to be assembled at that station is positioned generally vertically above the place where it is to be installed.

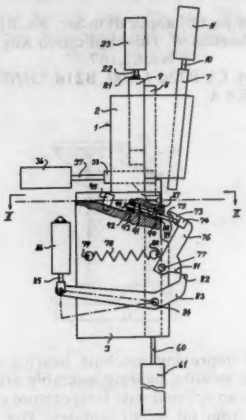
3,600,786

MACHINES FOR APPLYING SLIDERS TO SLIDE FASTENERS

Harry Hansen, Valby-Copenhagen, Denmark, assignor to Lysta A/S, Copenhagen-Valby, Denmark

Filed Mar. 20, 1969, Ser. No. 808,830
Claims priority, application Denmark, Mar. 22, 1968, 1241/68
Int. Cl. B23p *19/04*
U.S. Cl. 29—207.5 SL **5 Claims**

The invention relates to a machine for applying sliders to a slide fastener blank in the form of two continuous tapes with interengaging rows of fastening elements alternating with blank zones where a slit is formed between the tapes. The machine comprises a pair of spreading legs, the ends of which lie close together to form a wedge capable of penetrating through the slit between the tapes and thereafter being movable away from each other to spread the tapes apart for receiving a slider therebetween. The machine also comprises a spreading finger introducible between the tapes to spread them further apart so as to initiate disengagement of the



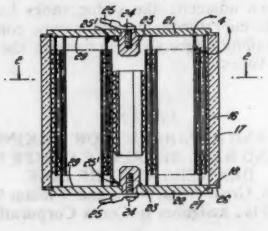
fastening elements first entering into the slider upon continuation of the feeding movement of the blank.

3,600,787

METHOD OF MAKING CAPACITORS WITH FREE-STANDING ELECTRODES

Wesley N. Lindsay, San Jose, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

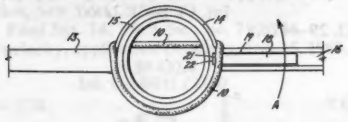
Continuation-in-part of application Ser. No. 696,951, Jan. 10, 1968, now abandoned which is a continuation of Ser. No. 509,250, Oct. 21, 1965, abandoned, which is a division of Ser. No. 326,696, Nov. 29, 1963, abandoned. This application May 26, 1969, Ser. No. 827,741
Int. Cl. H01g *13/00*
U.S. Cl. 29—25.41 **16 Claims**



The disclosure includes a method of making a vacuum capacitor having parallel, conductive electrodes which can be in the form of plates, discs, cylinders, or meshed spirals. Two spacing layers of dielectric, bonded salt particles, or bonded molybdenum trioxide particles are employed to keep the turns of each plate spaced from each other and from the turns of the other plate. Removable stainless steel strips may also be used in some configurations of electrodes. A braze joint is provided for one edge of one plate to fix the position of the said one plate. A braze joint is similarly provided for an edge of the other plate. Brazing is performed while both plates and both spacing layers are held tightly together. The plates are then further processed to make a vacuum capacitor. It is one outstanding feature of the disclosure that the brazing steps are performed while the spacing layers are left intact. This makes it possible to increase arcing or breakdown voltage, to increase capacitance, and to decrease the size of the capacitor. It is also possible to make a larger

diameter capacitor and a longer capacitor of much greater capacitance. It is further possible to make such an improved capacitor at a lower cost.

3,600,788
RUBBER BAND STRETCHING TOOLS
Walter R. Armand, 1320 Speer Blvd., Denver, Colo.
Filed July 16, 1969, Ser. No. 842,281
Int. Cl. B23p *19/04*
U.S. Cl. 29—229 3 Claims



An outer cylindrical sleeve rotatably positioned about an inner cylindrical sleeve, each sleeve being provided with a radially projecting handle, said handles being capable The alignment to receive a contracted rubber band and capable of relative rotation to stretch said band into a circular ring peripherally encircling said outer cylindrical sleeve, provided with trigger means for urging said stressed ring from said outer sleeve to a contracted position about a work piece positioned within said inner cylindrical sleeve. wire

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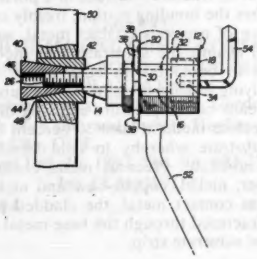
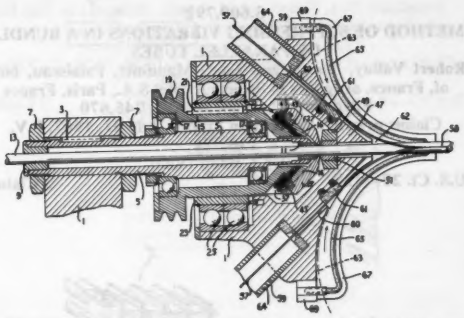
3,600,789
LEAD ANCHOR-SETTING TOOL
Harry P. Buberniak, 12372 DeVoe Ave., Southgate, Mich.
Filed June 27, 1969, Ser. No. 837,268
Int. Cl. B23p *19/04*
U.S. Cl. 29—264 3 Claims



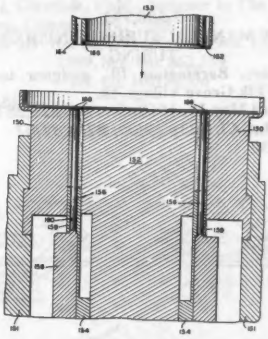
A setting tool suitable for installing lead anchors in walls having the following elements: a main body having a tapered conical nose at one end and a central bore having an enlarged diameter section at the end opposite the nose. An annular groove is cut in the surface of the main body concentric to the central bore, and a small bore extends from the bed of the groove to the central bore on an axis transverse to the axis of the central bore. A drive bolt is seated in the central bore of the main body, and comprises a cylindrical head having an internal recess adapted to receive a turning wrench, a section of reduced diameter attached to and on the same axis with the head having an annular groove in it which is aligned with the annular groove on the surface of the body, and a threaded section attached to the section of reduced diameter and having the same axis. A pin is seated in the small bore in the main body, one end of which extends into the annular groove in the section of reduced diameter of the drive bolt, thus retaining the bolt against axial movement. A retaining split ring, mounted in the groove of the body, holds the pin in place.

3,600,790
MANUFACTURE OF CLAD WIRE AND THE LIKE
Paul A. Dion, North Attleboro, Mass., and Arthur J. Thomson, Allamuchy, N.J., assignors to Texas Instruments Incorporated, Dallas, Tex.
Division of Ser. No. 607,254, Jan. 4, 1967, Pat. No. 3,444,603.
Filed Mar. 7, 1969, Ser. No. 805,260
Int. Cl. B21d *39/04*
U.S. Cl. 29—474.1 10 Claims



A wire is pulled by squeeze rolls through a drawing die, a guide bushing, a circumferential milling device, and an axially operative shaving die. The shaving die forms a virgin surface on the wire. The milling device is operative closely adjacent to the inlet of the shaving die so as to cut away its chips and prevent jamming thereby and wire breakage. Between the shaving die and the draw rolls clean cladding strips are brought into engagement with the virgin surface of the wire to effect solid-phase bonding thereto under roll squeezing action. They converge in a compartment leading to the rolls and containing a protective or reducing atmosphere. The cutting edge of the shaving die also forms a gas seal around the wire inlet to this compartment.

3,600,791
METHOD OF MAKING A COMPOSITE BRAKE DRUM
Charles Robert Talmage, New Canaan, Conn., assignor to Motor Wheel Corporation, Akron, Ohio
Division of Ser. No. 433,563, Feb. 18, 1965, abandoned.
Filed June 14, 1968, Ser. No. 796,241
Int. Cl. B22f *3/24*
U.S. Cl. 29—420.5 5 Claims



A method of making a composite brake drum having an axially perforated sintered metal drum ring and a stamped

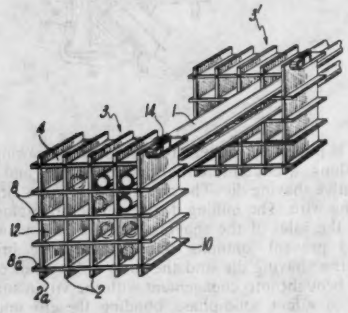
steel mounting back attached to one end of the drum ring. The drum ring is compacted from ferrous powder in an annular cavity of a compacting press while a plurality of tapered core pins are disposed in circumferentially spaced relation in and extending axially through the cavity. The compact is stripped from the cavity and pins by movement of the compacting punches relative thereto. The compact is sintered to complete the drum ring and thereafter a stamped steel back is secured to the ring by arc welding a continuous welded seam between the ring and back.

3,600,792

METHOD OF SUPPRESSING VIBRATIONS IN A BUNDLE OF PARALLEL TUBES

Robert Valluy, Massy, and Louis Maudinet, Palaiseau, both of, France, assignors to Societe Alcatel S.A., Paris, France

Filed July 22, 1968, Ser. No. 746,670
Claims priority, application France, July 31, 1967, P.V. 116,371
Int. Cl. B23p *19/00*
U.S. Cl. 29—428 **3 Claims**



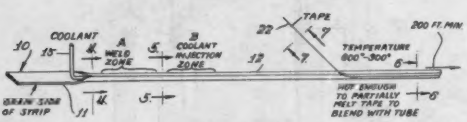
In order to suppress vibrations at a point of a bundle of parallel tubes without complicating the assembly of the bundle or entailing the need to dismantle the tube bundle after it has been installed, there is accordingly inserted between the tubes of the bundle a first series of parallel plates which are carried by an end-plate and which limit vibrations in a first direction, then a second series of parallel plates perpendicular to the first one for limiting the vibrations in a second direction, the two series of plates are then displaced by sliding in a longitudinal direction and thereby interassembled in such a manner that each tube is placed in a parallelepipedal recess while being in contact only with one or at a maximum with two of said plates, whereupon the two series of plates are rigidly fastened together.

3,600,793

METHOD OF MANUFACTURING FINISHED WELDED TUBING

John E. Masters, Barrington, Ill., assignor to Pre Finish Metals, Inc., Elk Grove Village, Ill.

Filed May 16, 1969, Ser. No. 825,287
Int. Cl. B23p *19/00*; B23k *31/02*
U.S. Cl. 29—430 **3 Claims**



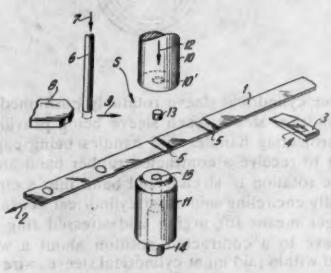
Flat prefinished metal strip is continuously converted to prefinished tube in a tube forming and welding process which includes continuous application of a film matching strip to the tubing in the region of the weld while the tubing is still hot from the welding operation. The film strip includes a surface which is at least partially heat-fusible at the temperature of the tubing surface at the point at which the film strip is applied and is adherent thereto.

3,600,794

METHOD AND APPARATUS FOR PRODUCING ELECTRICAL CONTACTS

Akira Shibata, and Shigeru Tabei, both of Tokyo, Japan, assignors to Chugai Electric Industrial Co., Ltd., Tokyo, Japan

Filed Dec. 31, 1968, Ser. No. 788,258
Claims priority, application Japan, June 18, 1968, 43/42,070
Int. Cl. B23k *21/00*
U.S. Cl. 29—470.1 **2 Claims**



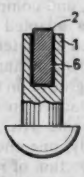
A method and apparatus are provided for pressure-bonding a precious contact metal selected from the group consisting of silver, platinum, gold, palladium and alloys based on these metals to a metal substrate strip selected from the group consisting of copper, nickel, copper-base and nickel-base alloys to which the contact metal is cold bondable. The invention includes feeding a strip of the metal substrate towards a bonding station comprising upper and lower dies, one die being adapted to apply pressure to the other, producing a freshly cut or fractured surface in a portion of the strip before it reaches the bonding station, freshly cutting or fracturing the piece of precious contact metal, superposing the precious metal against the substrate with their freshly fractured surfaces in contact with each other, and then immediately applying impact pressure to the superposed metal portions by means of the pressure-applying die sufficient to deform the precious metal at least 30 percent of its thickness against the substrate whereby to cold bond the precious metal to the substrate. Precious metal cladded to a base metal of copper, nickel, copper-base and nickel-base alloys may be used as contact metal, the cladded precious metal being freshly fractured through the base metal side for bonding to the metal substrate strip.

3,600,795

METHOD OF SOLDERING

John Olof Brundin, Fagersta, Sweden, assignor to Fagersta Bruks Aktiebolag, Fagersta, Sweden

Filed Nov. 25, 1968, Ser. No. 778,387
Claims priority, application Sweden, Nov. 27, 1967, 16232/67
Int. Cl. B23k *31/02*
U.S. Cl. 29—473.1 **4 Claims**



A method of soldering together two metal bodies having substantially different coefficients of expansion wherein a

first body having a low coefficient of expansion is snugly fitted into a recess in a second body having a high coefficient of expansion, and effecting a soldering gap between said first and second bodies by heating them to the soldering temperature thereby causing a differential expansion of the bodies due to their different coefficients of expansion.

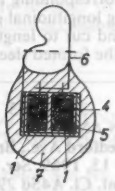
3,600,796

METHOD OF MANUFACTURING ELECTRICAL CAPACITORS

Horst Gebert; Silvia Lipka, and Martin Meyer, all of Nurnberg, Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 14, 1969, Ser. No. 790,986
Claims priority, application Germany, Jan. 15, 1968, P 16 39 432.4
Int. Cl. B01f *17/00*

U.S. Cl. 29—570 **7 Claims**



A capacitor is formed of two metallic anode bodies mounted closely together. A dielectric oxide layer is formed on the bodies over which a semiconductor layer is applied and then a conductive layer is applied to combine the bodies into one unit.

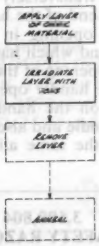
3,600,797

METHOD OF MAKING OHMIC CONTACTS TO SEMICONDUCTOR BODIES BY INDIRECT ION IMPLANTATION

Robert W. Bower, Palos Verdes, and Gordon A. Shifrin, Malibu, both of, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 26, 1967, Ser. No. 693,215
Int. Cl. H01l *7/18*

U.S. Cl. 29—584 **11 Claims**



Method of making ohmic contacts to a semiconductor body by applying a layer of the desired contact metal on the surface of a semiconductor, bombarding this dopant with a beam of ions to drive atoms of the contact metal into the semiconductor body, and then removing the metal layer, if desired.

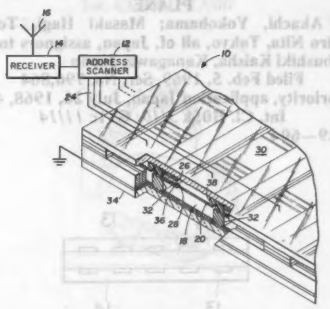
3,600,798

PROCESS FOR FABRICATING A PANEL ARRAY OF ELECTROMECHANICAL LIGHT VALVES

Ray H. Lee, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 25, 1969, Ser. No. 801,971
Int. Cl. H01s *4/00*

U.S. Cl. 29—592 **12 Claims**



Electromechanical light valves in a panel array are fabricated by a process including several metal patterning steps. Each light valve consists of a housing having grounded conducting walls for shielding the interior thereof from external electrostatic forces produced by surrounding valves in the array or from other external electrostatic forces. These walls are formed in a series of processing steps on a light transparent substrate coated with a conductive coating. Light from a source enters one end of the housing through a light transparent substrate to which is mounted an electrostatically controlled leaf shutter for each valve also formed in a series of processing steps. Upon completion of the processing for forming the individual leaf shutters on the one transparent substrate and the valve housings on the other transparent substrate, the two transparent panels are aligned to form an array of electromechanical light valves. The display state of the individual light valves may be modulated by a video signal in a system that makes use of the capacitance of the individual valve as a storage device for transforming the video signal, which is available only during a writing time of short duration to a display signal. Necessary components for each of the light valves required in a display duration modulation system are fabricated in the process for producing the light valve array.

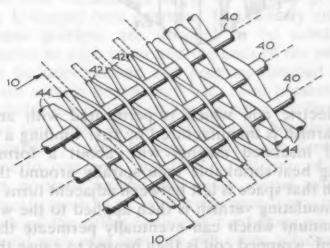
3,600,799

METHODS OF FABRICATION OF PREWOVEN BIT-WIRE MEMORY MATRIX APPARATUS

John S. Davis, Glendale, Calif., assignor to The Bunker-Ramo Corporation, Canoga Park, Calif.

Division of Ser. No. 365,891, May 8, 1964. Filed July 16, 1969, Ser. No. 862,559
Int. Cl. H01f *7/06*

U.S. Cl. 29—604 **10 Claims**



A woven configuration of a bit-wire memory utilizes certain orthogonal filamentary elements to develop selectively

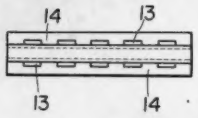
positioned discontinuities in the layer of remanently magnetic material deposited on the bit-wires to limit domain wall travel during operation of the memory. Particular fabrication methods which arrange the various interwoven elements so as to provide selective masking which results in the desired discontinuities are disclosed.

3,600,800

METHOD OF MANUFACTURING WIRE MEMORY PLANE

Hisateru Akachi, Yokohama; Masaki Hagi, Tokyo, and Yoshihiro Nita, Tokyo, all of, Japan, assignors to Oki Densen Kabushiki Kaisha, Kanagawa, Japan

Filed Feb. 5, 1969, Ser. No. 796,864
Claims priority, application Japan, July 26, 1968, 43/52862
Int. Cl. H05k *3/10;* **G11c** *11/14*
U.S. Cl. 29—604 **3 Claims**



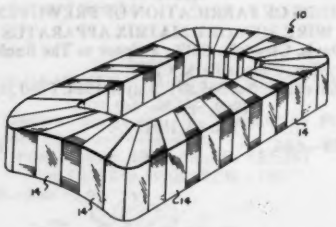
A wire memory plane comprising two parallel word line plates of thermosetting or thermoplastic resin plates formed with a large number of word lines arranged parallel to one another on one side of each of said resin plates such that one surface of each of said word lines is exposed, and a thermosetting or thermoplastic resin plate formed with a large number of digit wires arranged parallel to one another and embedded in said resin plate, said former two resin plates being laid one over another with the sides thereof on which the word lines are exposed being in face-to-face relationship and said latter resin plate being inserted between said former resin plates with the digit wires and the word lines being disposed in right-angle relationship. The three resin plates arranged in the manner described are then joined integrally with one another.

3,600,801

METHOD OF MANUFACTURING AN ELECTRIC COIL

Walter N. Larsen, Erie, and Kenneth R. Reynolds, Lawrence Park, both of, Pa., assignors to General Electric Company

Filed Apr. 14, 1969, Ser. No. 815,993
Int. Cl. H01f *7/06*
U.S. Cl. 29—605 **6 Claims**



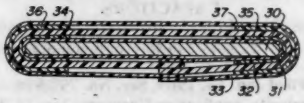
An electric coil which is permeated with an insulating liquid varnish is manufactured by first winding a plurality of turns of insulated magnet wire about a form and then wrapping heat-shrinkable tape spirally around the resulting coil such that space is left between adjacent turns of the tape. Liquid-insulating varnish is then applied to the wrapped coil in an amount which can eventually permeate the coil. The varnished, wrapped coil is then heated to cause the wrapping material to shrink and compress the heretofore loose coil so that the varnish fills the voids between adjacent turns of the coil as it is being at least partially cured.

3,600,802

INSULATED BUS BAR AND METHOD OF MAKING

George N. Jorgensen, and Harris I. Stanback, both of Lexington, Ky., assignors to Square D Company, Park Ridge, Ill.

Continuation of application Ser. No. 518,809, Jan. 5, 1966, now abandoned. This application June 26, 1969, Ser. No. 842,776
Int. Cl. H01b *13/00;* **H05k** *3/00*
U.S. Cl. 29—624 **6 Claims**



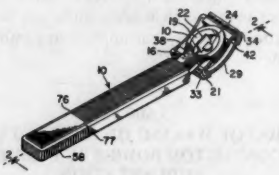
Methods of making insulated bus bars using flat, non-self-conforming insulating film as insulation. One or more strips of insulating film are fed through various work stations in which the strips are formed into a generally U-shaped cross section, heated on the inside of the U-shaped cross section, formed into a sleeve corresponding to the shape of a bus bar and having overlapping longitudinal edge portions, heated on the outside, cooled, and cut to length. A bus bar is then inserted transversely in the formed sleeve.

3,600,803

CORN AND NAIL CUTTER

Zolman Nachsi, 613 Bedford Ave., Brooklyn, N.Y.

Filed June 13, 1969, Ser. No. 832,906
Int. Cl. A45d *29/00*
U.S. Cl. 30—27 **5 Claims**



A corn and nail cutter has been provided with a removable blade handle assembly and a handle that has a round head for the securement of the blade assembly thereto. The blade is already retained by the blade parts and assembly provides a self-contained unit for fixing the blade to the handle. The blade assembly and round head are so constructed that the blade assembly can be placed on the round head and retained rigidly in four different 90° angle positions to expose the blade edges either transversely or longitudinally of the handle. In the opposite end of the handle there is provided a slotted and elongated opening in which a liquid-treating device may be stored and which has a partial cover to close the slotted part of the opening of the handle when the device is thrust home into the handle opening. Protuberances and recesses are provided on the handle and the container to hold the same in the handle and also on the partial handle on the container to hold the same aligned with the container over the brush.

3,600,804

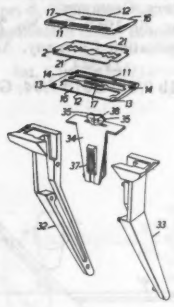
SAFETY RAZORS

Norman Joseph Brown, Maidenhead, England, assignor to The Gillette Company, Boston, Mass.

Filed June 17, 1968, Ser. No. 737,554
Claims priority, application Great Britain, June 19, 1967, 28155/67
Int. Cl. B26b *21/00*
U.S. Cl. 30—32 **1 Claim**

A disposable safety razor head comprising a double-edged blade which is permanently secured in molded plastics

material which extends over a part of each face of the blade, the plastics material applied to each face of the blade being shaped to form a guard for one of the cutting edges and a cap



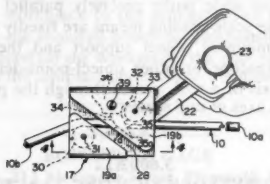
for the other cutting edge, and the head being adapted to be detachably and reversibly secured to a handle, with one cutting edge only of the blade accessible for use in each position of attachment.

3,600,805

TOOL FOR SLITTING TWO-CONDUCTOR CABLE

Robert J. Stuckel, 1210 Greenacres Lane, Mount Prospect, Ill.

Filed July 8, 1969, Ser. No. 839,942
Int. Cl. B21f *13/00;* **B26b** *27/00*
U.S. Cl. 30—90.9 **13 Claims**



On wide face the tool has a diagonally disposed slot into which a two-conductor cable, heavily insulated and of oval cross section, can be inserted edge first to lie between lead and trailing rollers. Pulling on the handle toward the free end of the cable swings the tool into alignment, thereby piercing the cable with a pointed blade which is carried between the rollers. With continued pulling the leading sharp edge of the blade then slitting the heavy insulation between the two conductors, the angle of the blade edge tending to draw the cable against the lead roller.

3,600,806

SUTURE-REMOVING INSTRUMENT

Edmund P. Naccash, 733 N. Vermont St., Arlington, Va.

Filed Jan. 20, 1970, Ser. No. 4,311
Int. Cl. B26b *27/00;* **A61b** *19/00*
U.S. Cl. 30—294 **9 Claims**

A curved needle is provided with a sharp inner edge or blade and a blunted point whereby it may be used to remove surgical sutures with a minimum of discomfort to the patient and with a minimum of infection risks since the articles may be supplied in sterilized packages and discarded after use.

3,600,807

ODORIFEROUS DENTAL APPARATUS

Samuel Henry Sipos, Garden City, Mich., assignor to Denture Fresh

Filed Apr. 14, 1969, Ser. No. 815,858
Int. Cl. A61c *13/00*
U.S. Cl. 32—2 **9 Claims**

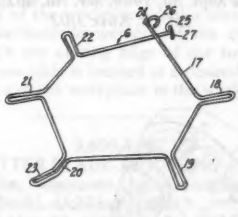
An oral apparatus for making the mouth pleasantly tasteful and exhaled air aromatically pleasant. The apparatus is adapted to be provided in an artificial tooth or other dental appliance and includes an opening therein filled with either absorbent fibrous material saturated with an air-refreshant fluid or a removable insert for containing such fluid.

3,600,808

ANTERIOR ROOT-TORQUING AUXILIARY WIRE

James Jackson Reeve, 940 Vistavia Circle, Decatur, Ga.

Filed Jan. 22, 1970, Ser. No. 4,935
Int. Cl. A01c *7/00*
U.S. Cl. 32—14 A **7 Claims**



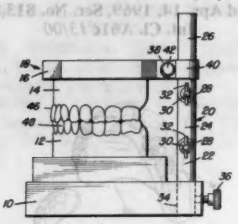
This invention relates to an auxiliary root-torquing wire for use with a main dental arch wire for applying torque to the root structure of a group of teeth. More particular, this invention is an anterior root-torquing auxiliary wire detailed to move the roots of the maxillary or mandibular anterior teeth either lingually or labially. The auxiliary root-torquing wire includes an integrally formed wire having a generally circular configuration and including a series of radially projecting substantially U-shaped bent portions. The radially extending U-shaped bent portions are detailed to be substantially coplanar relative to each other and the ends of the integrally formed wire includes hooked end portions detailed for engagement with a main dental arch wire. The present invention also includes the method of applying the auxiliary root-torquing wire to a main dental arch wire by hooking a first end of the auxiliary torquing wire to the main dental arch wire adjacent to one end, inserting a first one of the U-shaped bent portions behind the main dental arch wire between adjacent teeth in an interdental space, progressively inserting each of the other U-shaped bent portions behind the main dental arch wire between still other adjacent teeth interdental spaces, and hooking the second end of the auxiliary torquing wire adjacent to a second end of the main dental arch wire.

3,600,809

DENTAL CAST ARTICULATOR

Raymond E. Krueger, 3659 4th Ave., Apt. 6, San Diego, Calif.

Filed Jan. 3, 1968, Ser. No. 695,529
Int. Cl. A61c *11/00*
U.S. Cl. 32—32 1 Claim



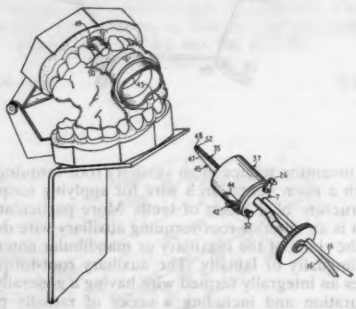
This invention is an articulator for adjustably supporting dental casts (used in making dentures) in a position corresponding to the actual position of the jaws for which the dentures are to be made. This articulator provides a device whereby the upper casting may be moved vertically relative to the lower casting, may be pivoted relative to the lower casting in the same manner that the human jaws pivot, and may be moved forwardly or backwardly along an axis extending from the front to the rear of the castings. In addition, the castings may partake of any two or all three of the above adjustments, as may be necessary to depict the true occlusal planes of the patient's original teeth.

3,600,810

DENTAL INSTRUMENTS

Kenneth Henry Marshall, Castlecrag; Bruce Bertram Burns, Balgowlah, and Thomas Laidlaw Gregan, Vaucluse New South Wales, all of, Australia, assignors to Premach Pty. Limited, Sydney, New South Wales, Australia

Filed Sept. 30, 1969, Ser. No. 862,243
Int. Cl. A61c *3/02*
U.S. Cl. 32—49 9 Claims



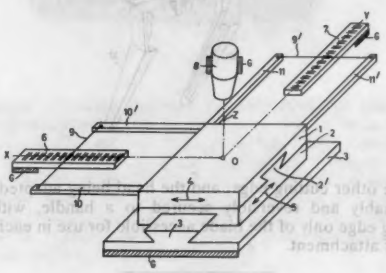
An aid for the dental preparation of a tooth for a jacket crown in which the depth of an axial cut and a circumferential cut of a bur is controlled mechanically, the aid comprising firstly a guide member securable over the bur and having a stem partly enclosing the bur and an outer tip to engage and protect a patient's gum and contacting the base of a tooth to limit the depth of circumferential cut, and secondly a barrel slidably housing a drive motor carrying the bur, the barrel being inserted into a guide sleeve fixable in the patient's mouth and having a follower engageable with a cam on the sleeve to limit the axial insertion of the barrel and bur so that the axial limit of the cut of the bur follows the patient's gum line.

3,600,811

ARRANGEMENT FOR MEASURING OR ADJUSTING TWO-DIMENSIONAL POSITION COORDINATES

Adolf Weyrauch, Aalen, Germany, assignor to Carl Zeiss Stiftung, doing business as, Carl Zeiss, Heidenheim on the Brenz, Wuerttemberg, Germany

Filed Aug. 20, 1968, Ser. No. 754,046
Claims priority, application Germany, Aug. 22, 1967, P 16 23 343.5
Int. Cl. G01b *9/00*; G01d *7/04*; G23q *17/00*
U.S. Cl. 33—125 R 6 Claims



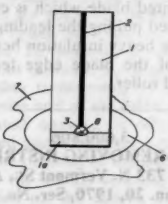
An arrangement for measuring two-dimensional position coordinates of points on an object. It is provided with two unidimensional scales fixed relative to the base and avoids guiding errors which are apt to occur when the worktable or other slidable support carrying the object is rotated somewhat from slide paths precisely parallel to the scale directions. The scale-reading means are fixedly connected to the slidably mounted object support and the axis of the focusing microscope or other object-point-defining device, such as the axis of a tool, passes through the point of intersection of the axes of said scales.

3,600,812

SURVEYOR'S SIGHTING TARGET

Walter V. Cromoga, 3540 Portland Ave., Tacoma, Wash.

Filed Oct. 2, 1969, Ser. No. 863,051
Int. Cl. G01c *15/08*; G09f *7/12*
U.S. Cl. 33—74 5 Claims



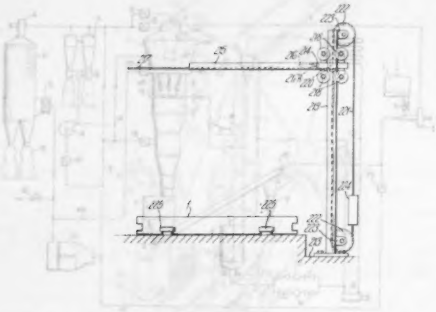
A surveyor's sighting target for use on a surveying monument comprises a strip of stiff, foldable material including a body portion having a pair of feet connected to one end, an index mark on the body portion, and an opening through the body portion at the line of connection of the feet. In use of the target, the feet are spread apart and affixed to a surveyor's monument having the usual reference cross on its surface. By looking through the view opening and lining the index mark on the target with the cross on the monument, the surveyor is able to locate the target precisely in the proper position.

3,600,813

DEVICES FOR SECURING OR POSITIONING WORKPIECES FOR MACHINING OPERATIONS

Peter Grant Davis, Deptford, London, England, assignor to Molins Machine Company Limited, London, England

Filed Apr. 4, 1968, Ser. No. 718,884
Claims priority, application Great Britain, Apr. 14, 1967, 17,248/67
Int. Cl. G01b 3/14
U.S. Cl. 33—174 3 Claims



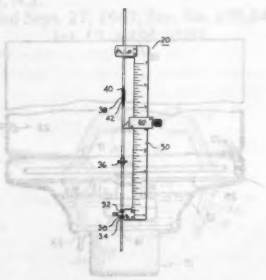
Different workpieces are secured to a common form of pallet for machining by placing a template defining the required positional relationship of supports for a particular workpiece, on a pallet, fitting supports in apertures in the template and fixing the supports to the pallet, and securing the particular workpiece to the supports. The template can further define the required positional relationship of clamps and can be placed on the workpiece, the clamps being fitted in apertures in the template and fixed to the pallet.

3,600,814

BOWSTRING GAGE

Gene E. Smith, 211 Alexander Street, Plymouth, Ind.

Filed July 18, 1969, Ser. No. 843,098
Int. Cl. G01b 3/30
U.S. Cl. 33—180 R 8 Claims



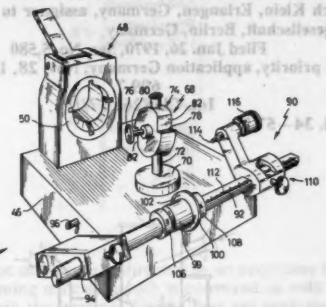
A bowstring gage for locating, checking, and positioning a kisser button and peepsight, having an elongated body with a member slidable along the body for locating the desired points, and a clip means for holding one end of the body at the nocking point and the other end of the body in parallel relation with the string. The means which slides along the body preferably includes a setscrew or the like for retaining the slide means in desired position for locating either of the two points.

3,600,815

SETTING ARRANGEMENT FOR FACILITATING THE POSITIONING OF CROSS-SLIDES IN MACHINE TOOLS FOR TREATMENT OF ROUND WORKPIECES

Helmut Link, Esslingen-Serchenaecker, Germany, assignor to Index-Werke K. G. Hahn and Tessky, Esslingen (Neckar), Germany

Filed Sept. 12, 1968, Ser. No. 759,397
Claims priority, application Germany, Sept. 15, 1967, P 16 02 840.3
Int. Cl. B27g 23/00
U.S. Cl. 33—185 10 Claims



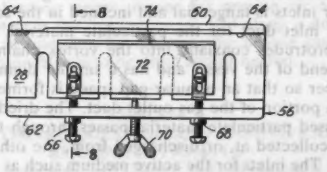
The cross-slide of a turning lathe wherein round workpieces are treated by tools mounted in toolholders movable in the cross-slide radially of the work spindle is pivotable in a plane extending at right angles to the work spindle about an axis which is parallel to the axis of the work spindle. The cross-slide is further movable in parallelism with the axis of the work spindle. The apparatus for properly positioning the cross-slide with reference to a round workpiece in the work spindle comprises a first positioning device including caliper which can facilitate adjustment of the cross-slide in a sense to place the cutting edge of a tool in the toolholder of the cross-slide on the axis of the workpiece, and a second positioning device which facilitates movement of the cross-slide to a position in which the cutting edge of the tool in the toolholder on the cross-slide is located at a desired distance from the front end face of the workpiece in the work spindle.

3,600,816

ROTARY CUTTER BLADE-ADJUSTING APPARATUS

Takashi Watanabe, Nagoya-shi, Japan, assignor to Kabushiki Kaisha Towa Denki, Aichi-ken, Japan

Filed Mar. 21, 1969, Ser. No. 809,281
Claims priority, application Japan, Apr. 5, 1968, Apr. 5, 1968, Apr. 5, 1968 and July 30, 1968, 43/22,042;43/26,699; 43/26,698;43/53,369
Int. Cl. B27g 23/00
U.S. Cl. 33—185 5 Claims



Apparatus for adjusting a blade of a rotary cutter. The blade is removable from the body of the cutter when an edge of the blade is sharpened. A positioning member is adjustably connected with the blade member, and a gauge is provided for adjusting the positions of the blade member and positioning member one with respect to the other while they are still separate from the cutter body so that the relative positions of the blade and positioning members will situate the cutting

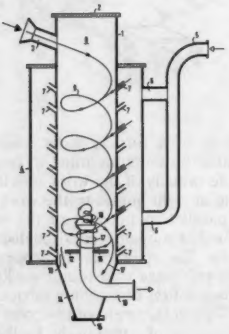
edge of the blade at the proper location with respect to the positioning member. The cutter body has a locating part which locates the positioning member at a predetermined location on the cutter body, so that in this way when the parts are reassembled with the positioning member situated at this predetermined location, the blade will automatically assume its proper cutting position at the cutter body.

3,600,817

PROCESSING APPARATUS FOR EFFECTING INTERACTION BETWEEN, AND SUBSEQUENT SEPARATION OR GASEOUS AND SOLID OR LIQUID PARTICULATE SUBSTANCES

Heinrich Klein, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed Jan. 26, 1970, Ser. No. 5,580
Claims priority, application Germany, Nov. 28, 1969, P 19 59 699.7
Int. Cl. F26b *17/10*
U.S. Cl. 34—57 E **9 Claims**



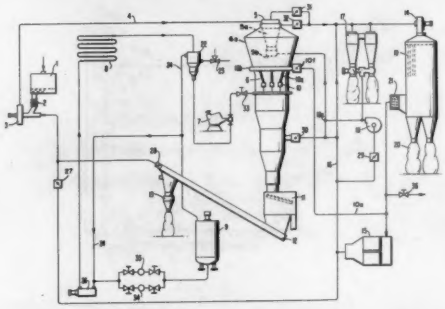
An apparatus for drying or otherwise processing solid or liquid particulate substances comprises an axially elongated vessel which forms a cylindrical vortex chamber, an inlet duct communicating with the chamber at one otherwise closed end for supplying the particulate substance in a direction substantially tangential to the vortex chamber and inclined toward the other end of the vessel. The cylindrical portion of the vessel is provided with a number of further inlets for the supply of active medium such as hot air for drying the particulate substance. The entering direction of the further inlets is tangential and inclined in the same direction as the inlet duct for the particulate material. A gas outlet duct protrudes coaxially into the vortex chamber near the other end of the vessel and has a smaller diameter than the chamber so that an annular gap space is formed around the mouth portion of the gas outlet duct. The dried or otherwise processed particulate material passes through the gap space to be collected at, or discharged from, the other end of the vessel. The inlets for the active medium such as drying air are distributed peripherally and lengthwise of the vessel and conjointly form an array which comprises inlets that communicate with the annular gap space at localities between the mouth of the gas outlet duct and the other vessel end. An annular plate member surrounds the gas outlet duct in fixed relation thereto and is axially spaced from the duct mouth to form a constricted annular passage between the plate member and the vessel at a locality within the region of the array of inlets.

3,600,818

METHOD OF AND APPARATUS FOR TREATING POWDERY OR GRANULAR MATERIALS WITH GASEOUS, LIQUID OR SOLID AGENTS OR STABILIZERS

Franz Lang, Lissberg; Gustav Gruen, Eckartsborn; Kurt Schwalm, Lebach, and Franz Josef Juchem, Lebach, all of, Germany, assignors to Gebruder Grun KG Maschinenfabrik, (Oberhessen), Germany

Filed Apr. 17, 1969, Ser. No. 816,930
Int. Cl. F26b *3/10*
U.S. Cl. 34—10 **8 Claims**



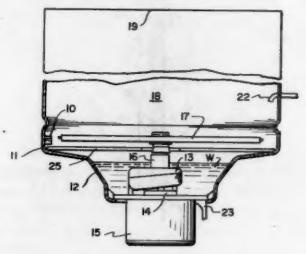
A system including a conically upwardly extended treating chamber into which granular dry material is fed that descends against a rising cold gas stream while being sprayed by a liquid and cold gas mixture. The sufficiently wetted and thus heavy particles leave the chamber through an outlet in its base while the lighter particles are reintroduced by the airstream into the spraying region of the chamber. The cold airstream is divided into a plurality of part streams, one part stream serves as carrier for said dry material and one part stream constitutes said rising stream.

3,600,819

DRYNESS SENSOR

Edward H. Getz, Watervliet, and Robert T. Wigfall, St. Joseph, both of, Mich., assignors to Whirlpool Corporation

Filed Dec. 15, 1969, Ser. No. 885,118
Int. Cl. F26d *19/00*
U.S. Cl. 34—48 **12 Claims**



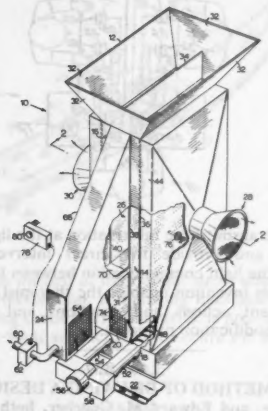
A liquid holder located within a washing apparatus chamber collects a predetermined amount of liquid during a wash cycle. The collected liquid is evaporated during a dry cycle of the apparatus. A thermistor mounted to the liquid holder bottom rapidly changes resistance upon complete evaporation of the collected liquid. The change in resistance fires an SCR to generate a signal which terminates the dry cycle of the apparatus.

3,600,820

AUTOMATIC CONTROL FOR GRAIN DRIERS

Lloyd D. Klein, Toronto, Ontario, Canada, assignor to Lloyd D. Klein Industrial Electronics Limited, Toronto, Ontario, Canada

Filed July 8, 1969, Ser. No. 840,002
Int. Cl. F26b *19/00*
U.S. Cl. 34—48 1 Claim



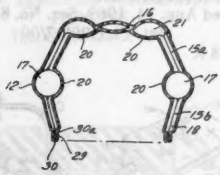
A grain drier for reducing the moisture content of grain. The drier comprises a vertical column that is supplied with hot air from an air heater, for heating grain which passes downwardly through the column. The grain temperature, and hence the moisture content, is controlled by a temperature control which has a probe for continuously deriving an electronic signal proportional to the grain temperature. An electronic control compares the signal with a reference signal and operates a valve which controls the flow of fuel to the air heater to maintain the grain temperature at a predetermined temperature corresponding to the reference signal.

3,600,821

HAIR DRYER HOOD

Albert E. Simon, Jr., Fort Washington, Pa., and William J. Rakocy, Clifton, N.J., assignors to Ronson Corporation, Woodbridge, N.J.

Filed Sept. 27, 1967, Ser. No. 670,844
Int. Cl. A45d *20/04*
U.S. Cl. 34—99 4 Claims



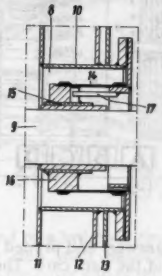
A hair dryer hood formed of a flexible material that is inflatable into a helmet shape, the hood being self-supporting without being carried by or in contact with the user's head, and being collapsible into a small space when not in use. The flexible material comprises inner and outer sheets secured together with primary and secondary air passages between the sheets, and a plurality of apertures in the inner sheet permitting warm air to be distributed to all areas inside the hood.

3,600,822

APPARATUS FOR DRYING AND STEAMING MATERIAL CONVEYED ON ROLLS OR DRUMS

Heinz Fleissner, Frankfurt am Main, Germany, assignor to VEPA AG, Basel, Schweiz, Germany

Filed July 22, 1969, Ser. No. 844,247
Claims priority, application Germany, July 20, 1968, P 17 79 229.9
Int. Cl. F26b *25/08*
U.S. Cl. 34—121 11 Claims



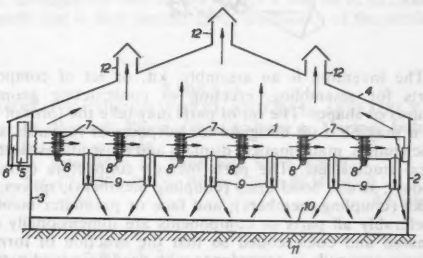
The present disclosure is directed to an apparatus for drying and steaming material which is conveyed on rolls and/or drums wherein the bearings for the fans are separated from the wall of the treatment chamber and/or the housing of the apparatus.

3,600,823

DRYING AND-OR HEATING DEVICES

James A. R. Borron, and Roger E. F. Stevens, both of Mago Island, England, assignors to Mago Island Estate Limited, Mago Island, Lau, Fiji Islands

Filed Dec. 23, 1968, Ser. No. 786,105
Claims priority, application Great Britain, Dec. 29, 1967, 59127/67
Int. Cl. F26b *25/06*
U.S. Cl. 34—232 1 Claim



Apparatus for drying and/or heating crops, the apparatus comprising heating means, means for passing air or other nontoxic gas over the heating means and along a duct, and vent means in said duct for directing the heated gas over a harvested crop which is to be dried and/or heated.

3,600,824

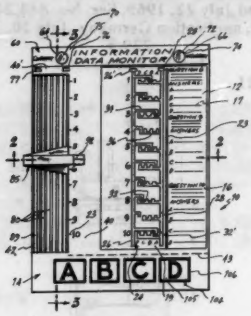
EDUCATIONAL QUESTION AND ANSWER CARD-READING APPARATUS

Lafayette A. Robinson, 302 Clinton Ave., Brooklyn, N.Y.

Filed July 14, 1969, Ser. No. 841,232
Int. Cl. G09b *7/06*
U.S. Cl. 35—9 R 7 Claims

An educational question and answer card-reading apparatus includes a data card which has a multiplicity of questions with a plurality of answers for each on one side of the card. On the other side is a printed circuit with groups of conductive elements arranged to correspond with correct and incorrect answers for each question. The card fits into a

card-reading device which has a question selector electrically bridging the conductive elements with conductive rails in the device. The rails are connected in circuit with correct and incorrect answer lamps and with answer-selecting pushbutton



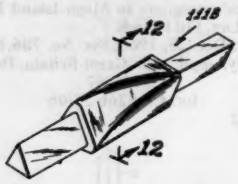
switches. Both the answers and printed circuitry may be applied to both sides of the data card. The printed circuit may be concealed or obscured by a layer of plastic, ink or other means so that the pattern of the circuit is not apparent.

3,600,825

SYNTHESIZED NATURAL GEOMETRIC STRUCTURES

Peter J. Pearce, 7657 Coldwater Canyon Ave., North Hollywood, Calif.

Filed Aug. 19, 1968, Ser. No. 753,468
Int. Cl. G09b *23/26*
U.S. Cl. 35—18 A **10 Claims**



The invention is an assembly, kit, or set of component parts for assembling, erecting or constructing geometric figures or shapes. The set of parts may take the form of a toy or it may be a set designed for purposes of research, scientific studies, mathematical displays and illustrations, architectural studies, etc. The parts include connectors (universal nodes); struts, bond links (coupling members); splices; face links (coupling members); and face or perimeter members. Preferably all parts or components are dimensionally coordinated and color coded so that the erection of forms or figures proceeds in accordance with predetermined patterns. Connectors or nodes include a universal node comprising a central member having spokes arranged in a predetermined array extending outwardly from the center along radii of a sphere. By means of the universal node and other parts (face members) there may be constructed a universal atom and various simulated molecular and other structures as well as geometric space-filling figures identified as nodal polyhedra.

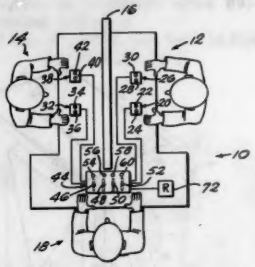
3,600,826

SIGNAL SYSTEM FOR ASSESSMENT AND MODIFICATION OF BEHAVIOR

Edwin J. Thomas, 2224 Vinewood Blvd., Ann Arbor, Mich.; Eileen D. Gambrill, 1250 Westport Road, Ann Arbor, Mich., and William H. Butterfield, 1215 Washtenaw, Ypsilanti, Mich.

Filed Aug. 8, 1969, Ser. No. 848,624
Int. Cl. G09b *5/00*
U.S. Cl. 35—22 R **3 Claims**

A system usable for the assessment and modification of human behavior comprising a plurality of client-actuatable light-operating switch assemblies, a plurality of light assemblies connected to the switch assemblies for operation in response to selective actuation of the switch assemblies for communication purposes, and a therapist controlled switch assembly connected in circuit with the client switch assemblies and the light assemblies enabling a therapist to render the client switch assemblies inoperable and also enabling the



therapist to transmit false information at the lights viewed by the clients and provide for direct intervention by the therapist in the light communication between the clients. The system of this invention enables the therapist to record and evaluate client actions and reactions and intervene for behavioral modification purposes.

3,600,827

METHOD OF DRAWING A DESIGN

Denys Fisher, and Edward M. Goacher, both of Ambleside, Westmoreland, England, assignors to Denys Fisher Toys Limited, Thorp Arch Trading Estate

Filed July 28, 1969, Ser. No. 845,565
Claims priority, application Great Britain, July 26, 1968, Mar. 21, 1969, 35758/68;14883/69
Int. Cl. G09b *11/04*
U.S. Cl. 35—26 **3 Claims**

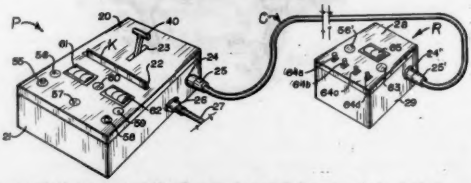
A method of producing a design by applying translucent coloring material repellent by means of a writing -instrument to an ink-absorptive surface of a sheet support, said repellent comprising polyalkyl siloxane in a volatile liquid medium which evaporates to leave the design, and thereafter applying a washable ink, water color or spirit soluble ink to color the sheet and to provide a contrasting color background against the design made by the writing instrument. The sheet may be coated with the repellent and coloring material before the written design is applied. The repellent may contain a coloring material which aids in creating different colors in contrast to each other.

3,600,828

TESTING APPARATUS FOR EXAMINATIONS

Leland G. Hodges, Denver, Colo., assignor to Leland G. Hodges, Denver; Arthur R. Wallace, Littleton and Jerald E. Watson, Wheat Ridge, Colo.

Filed Aug. 14, 1969, Ser. No. 849,983
Int. Cl. G09b *7/00*
U.S. Cl. 35—48 R **7 Claims**



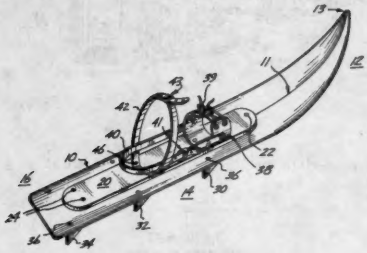
An apparatus for recording correct answers to a multiple choice-answer examination wherein a punch card coding correct answers is used in the apparatus at a control panel. The test is taken at a remote panel with answers being effected by closing circuits through selected switches which are either closed at the punch card or open depending upon whether the answer is correct or incorrect.

3,600,829

SNOWSHOES

Rodney M. La Violette, 14434 Ambaum Blvd. S.W., Seattle, Wash.

Filed Apr. 27, 1970, Ser. No. 31,968
Int. Cl. A43c *13/00*
U.S. Cl. 36—4.5 5 Claims



A snowshoe is formed of lightweight sheet material having an upturned prow section, a following load-bearing section, and a rear trailing section. The underside is provided with antislip cleats. Bindings are included to secure the shoe plate to the user's boot.

3,600,830

HOLLOW PELLETS FOR SEED

Bjorn Staffan Artur Hamrin, Bjarred, Sweden, assignor to Svenska Sockerfabriks Aktiebolaget, Malmo, Sweden

Filed July 29, 1969, Ser. No. 847,001
Claims priority, application Sweden, Aug. 16, 1968, 11039/68
Int. Cl. A01n *21/02*
U.S. Cl. 47—57.6 4 Claims

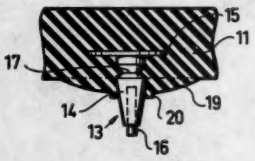
The present invention is concerned with the problem of protecting seed during the initial germination stage. According to the invention it has been discovered that considerable advantages are obtained if the seed is covered with an outer porous shell or pellet within which the seed lies freely in a space allowing an initial development or germination and protecting the seed against surrounding pests and the like until such time when the pellet bursts and the germinated seed is vital enough to withstand attack from such pests.

3,600,831

SHOES, PARTICULARLY GOLF SHOES, AND STUDS THEREFOR

Folke Lennart Olsson; Thure Verner Bolmen, and Karl-Erik Johansson, all of Halsingborg, Sweden

Filed Sept. 22, 1969, Ser. No. 859,934
Claims priority, application Sweden, Sept. 25, 1968, 12,903/68
Int. Cl. A43b *23/28*
U.S. Cl. 36—59 14 Claims



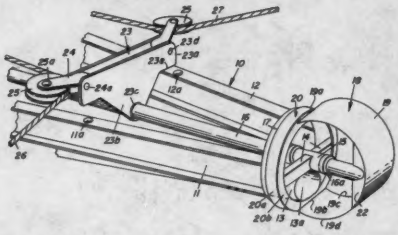
In a shoe having a rubber or plastic material sole there are provided metal studs projecting from the sole, which are retained in the sole by the rubber or plastic material moulded around each stud to enclose part of a length thereof and a flange provided on the stud.

3,600,832

PIVOTED CUTTER AND CONTROL FOR HYDRAULIC DREDGE

Thomas J. Smith, deceased, late of Stratford, Conn. (by James E. Smith, administrator, 1500 Elm St., Stratford, Conn., 06497)

Filed Jan. 20, 1970, Ser. No. 4,334
Int. Cl. E02f *3/92*
U.S. Cl. 37—58 12 Claims



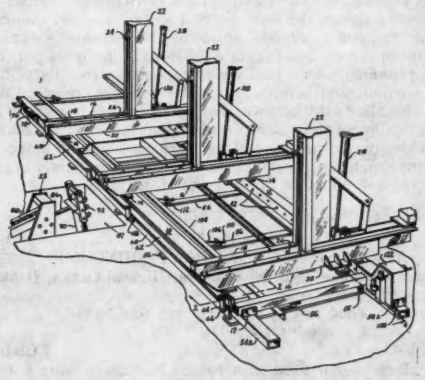
On the outboard end of a hydraulic dredge ladder there is an axially extending stub shaft mounted in spaced-apart bearings. Attached to the outer end of the ladder is a circular bearing member that extends transversely to and coaxial about the stub shaft. A cutter member formed of heavy sheet metal material in a circular arc a little greater than a semicircle is welded at its ends to a circular channel iron ring that is received over the circular bearing member for pivotal movement thereon. The inner midportion of the semicircularlike cutter head has a bearing member affixed thereto that is received over the protruding end of the stub shaft. A triangularlike bracket is received over the stub shaft towards its rear end and is welded thereto. The base of the triangularlike bracket is up and above the stub shaft and has a pivotal mounting at each end that carries a sheave. Below each end of the bracket there is a cutaway portion that forms stop portions which strike against stops on the side I-beams of the boom positioned therebelow to limit the tilt of the shaft and the cutter. The usual hauling wire ropes lead from a hauling drum through their respective sheaves to respective anchor position out beyond the side of the boom. By slackening on one rope and hauling on the other with the cutter in the earth, its edges cut into the earth and it tilts so as to loosen the earth that is then sucked up by the mouth of the suction tube.

3,600,833

CARRIAGE GUIDED WHEEL AND RAIL ASSEMBLY

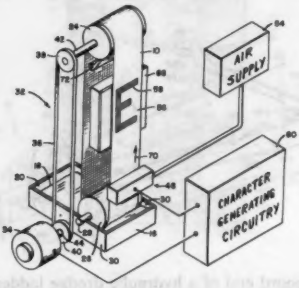
George W. Hartzell, Piqua, Ohio, assignor to Hartzell Industries, Inc., Piqua, Ohio

Filed Mar. 25, 1968, Ser. No. 715,678
Int. Cl. B27g *19/00*; B60b *17/00*; B61f *19/00*
U.S. Cl. 37—194 9 Claims



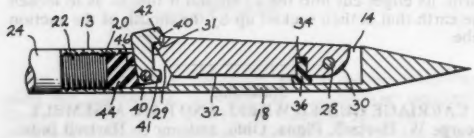
A self-propelled vehicle operating on a two rail track to receive a log at one portion of the track and to reciprocate the log through a cutting saw at another portion of the track.

3,600,834
DISPLAY APPARATUS
Michael E. Stamer, Chicago, Ill., assignor to Teletype Corporation, Skokie, Ill.
Filed June 27, 1969, Ser. No. 837,293
Int. Cl. G09f *11/32*
U.S. Cl. 40—32 6 Claims



Blowing forces are directed through selected compressed air openings toward films of ink held in a regularly perforated carrier, such as an endless mesh, for rupturing selected films and unblocking corresponding interstices to form a succession of characters, outlined in the carrier by the optical contrast between blocked and unblocked interstices.

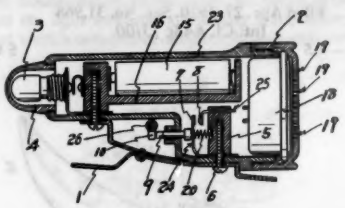
3,600,835
SPEAR HEAD WITH SWINGABLE BARB
Grover E. Hendricks, 2241 Lake St., Niles, Mich.
Filed Dec. 23, 1968, Ser. No. 785,961
Int. Cl. A01k *81/04*
U.S. Cl. 43—6 4 Claims



A head for a spear or like weapon having a tip section and a body section. An elongated barb is pivotally connected to the forward end of the body section and is received therein, and is resiliently urged outwardly therefrom. A catch mechanism is provided to retain the barb in the body portion and is provided with a part which projects outwardly of the body portion, and when engaged by a target, releases the catch and allows the barb to pivot to its outward position. In one embodiment the catch is a helical spring mounted about a shoulder on the rear end of the barb. In a second embodiment the catch is a pivotal element which is resiliently urged to engage a shoulder on the rear end of the barb.

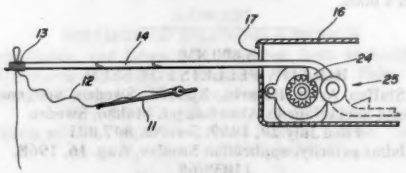
3,600,836
ALARM SIGNAL USED IN A FISHING ROD
Toshiaki Miyamae, 292, Nishi-Iwata, Higashi-Osaka, Osaka-Fu, Osaka City, Japan
Filed July 6, 1967, Ser. No. 651,554
Int. Cl. A01k *93/00*
U.S. Cl. 43—17 5 Claims

An alarm signal used in a fishing rod comprising a line suspension lever adapted to turn around a shaft provided in a direction substantially perpendicular to the fishing rod. A movable and a fixed connector are provided which contact each other whenever the line suspension lever turns around causing the electric circuit to actuate the alarm, including a buzzer and a pilot lamp. An electric cell is provided which



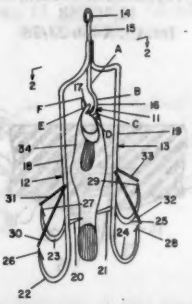
may be closed to produce the signal as soon as a fish is hooked.

3,600,837
FISHING AID
Howard A. Bristol, 1113 Blouin Drive, Dolton, Ill.
Filed June 16, 1969, Ser. No. 833,432
Int. Cl. A01k *87/00*
U.S. Cl. 43—19.2 3 Claims



A device to be used by fishermen to produce a variable selection of jigging motions in a fishline. Device has a simple motor, preferably battery operated, driving ratchet teeth which in turn activate and cause intermittent or regular controlled motions of a rod member to which the line is instantly removably affixed.

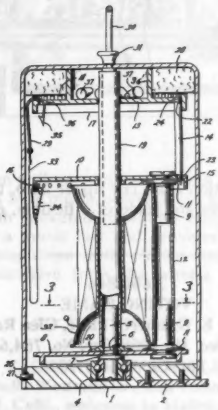
3,600,838
BAIT-HARNESSING FISH HOOKS
Charles W. Bablick, 233 Sherry Ave., Park Falls, Wis.
Filed Oct. 29, 1969, Ser. No. 872,039
Int. Cl. A01k *83/06*
U.S. Cl. 43—44.8 5 Claims



A bait-harnessing fish hook that retains the bait within the confines of a plurality of fish hook members so that a fish cannot strike at the bait without encountering one or more fish hooks. The device has a centrally positioned bait hook

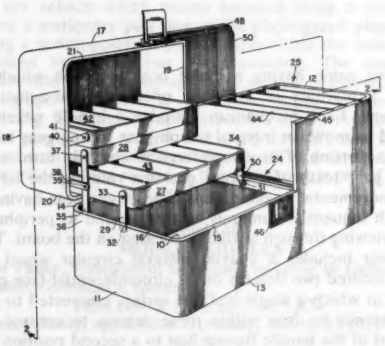
and a plurality of fish hook shanks depending from and surrounding the bait hook. A plurality of hooks are formed at the end of each fish hook shank as are also bait-penetrating spurs, the latter operating in conjunction with the bait hook to retain the bait. The fish hooks have weed deflector means to prevent entanglement with underwater objects.

3,600,839
TROT LINE HOLDER
Earl H. Waller, 7495 Haywood, Houston, Tex.
Filed Jan. 20, 1970, Ser. No. 4,229
Int. Cl. A01k *97/06*
U.S. Cl. 43—54.5 A **5 Claims**



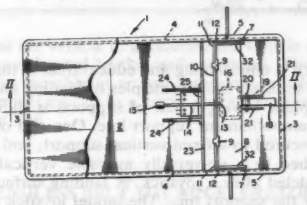
A trot line holder for carrying a trot line and the stages to be secured thereto having a base member and a reel and a pair of coaxially mounted rotatable tables thereon, adapted to receive the stages and maintain them ready to be mounted on the line after the line is set, said tables having means for receiving and maintaining the hooks of the respective stages in hook-receiving slots and the connecting pins of the respective stages in pin-receiving ports, preventing a tangle of stages while the line is being transported.

3,600,840
TACKLE BOX
Norman K. Meyer, 4783 N. Bend Road, Cincinnati, Ohio
Filed Sept. 4, 1969, Ser. No. 855,130
Int. Cl. A01k *97/06*
U.S. Cl. 43—57.5 R **1 Claim**



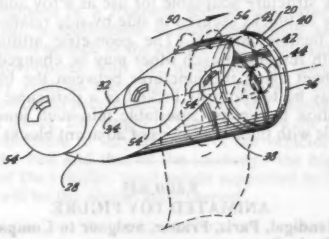
A tackle box divided into a pair of separate compartments, wherein fishing lures are hung on removable panels in one compartment and other fishing gear is disposed in trays in the other compartment. The panel compartment is of greater height than the tray compartment to receive panels of various lengths and the cover over the panel compartment is designed to hold the panels in place. The trays in the other compartment are hinged to the sidewalls and to the cover in a manner to expose the trays when the cover is raised.

3,600,841
ANIMAL TRAP
Gonzalo O. Catan, Jr., 2628 Alfonso St., Singalong Manila, Philippines
Filed May 23, 1968, Ser. No. 731,533
Int. Cl. A01m *23/10*
U.S. Cl. 43—68 **2 Claims**



A cage has upstanding walls provided with a pair of opposed holes. A balanced tubular member is pivotally mounted within the cage and is normally directed in line with the pair of opposed holes. The tubular member has an opening at the lower side thereof closed by a balanced cover member pivotally mounted on supports within the cage. A transverse wall within the cage is parallel to the tubular member and has an opening, towards which, the opening on the tubular member leads upon tilting of the tubular member and a downwardly slanting flexible barrier, the upper end of which, is secured to the transverse wall immediately above the opening therein, the lower side of said flexible barrier having pins to prevent rodents from going back through the opening on the transverse wall.

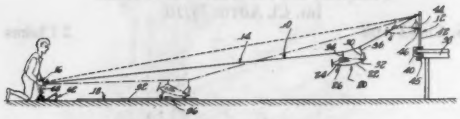
3,600,842
BUBBLE-PRODUCING GLIDER TOY
Harold Bryman, 3285 Coy Drive, Sherman Oaks, Calif.
Filed July 16, 1969, Ser. No. 842,300
Int. Cl. A63h *33/28*
U.S. Cl. 46—6 **3 Claims**



This glider toy is formed of a light plastic hollow cylindrical body the leading edge of which is circular and lies in a plane normal to the cylindrical axis. This leading edge is reenforced by a plastic band which serves to support at least one plastic strut which projects inwardly toward the cylindrical axis and supports a plastic bubble ring slightly forward of the leading edge of the cylindrical body but coaxially therewith. The trailing edge of the body is angularly disposed with respect to the cylinder axis. While the body may be

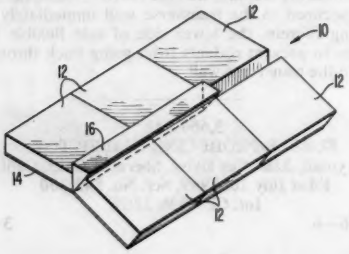
formed of any lightweight material, such as paper, acetate, etc., thin sheet polystyrene is preferable.

3,600,843
TOY
Joseph T. Becker, 21 West 674 Glenn Valley Drive, Glen Ellyn, Ill.
Filed Nov. 24, 1969, Ser. No. 879,413
Int. Cl. A63h *33/00*
U.S. Cl. 46—1 H **10 Claims**



A toy which is entertaining and educational in that the toy may be used to teach basic principles of landing an airplane. A model airplane having a pair of supports is slidingly supported on a monofilament support line. One end of the support line is secured to a fixed vertical support, and the other end is attached to a universally movable vertical support, which is modeled after a joystick. A landing surface is positioned below the support line. The model joystick is utilized to regulate the tautness of the support line in order to control the rate of vertical movement of the model airplane.

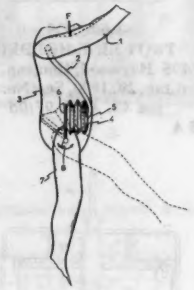
3,600,844
BLOCK STRUCTURE
Wesley D. Simpson, 2126 S. Walden Ave., Appleton, Wis.
Filed Oct. 13, 1969, Ser. No. 865,548
Int. Cl. A63h *33/00*
U.S. Cl. 46—16 **20 Claims**



A block structure adaptable for use as a toy and including a plurality of blocks secured in side-by-side relationship to a sheet of flexible material. The geometric attitude of the blocks with respect to each other may be changed by bending the sheet along the junctures between the blocks. The blocks may be temporarily locked in a particular geometric configuration by wedges insertable into such junctures and engageable with the facing sides of adjacent blocks.

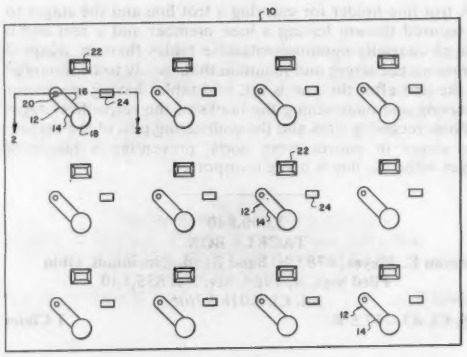
3,600,845
ANIMATED TOY FIGURE
Robert Mendigal, Paris, France, assignor to Compagnie Petitcollin, Paris, France
Filed Nov. 18, 1968, Ser. No. 776,460
Claims priority, application France, Feb. 2, 1968, 138,600
Int. Cl. A63h *29/16*
U.S. Cl. 46—44 **2 Claims**

Animated toy figure, of the doll or puppet type, capable of producing at will the realistic and different movements of the lower limbs comprising, symmetrically relative to the longitudinal axis of said figure, an upper limb which may be articulated, deformable under pressure and playing the role of an air syringe, connected inwardly by a tube to bellows bearing on the one hand on an inner stationary part of the body of said figure and, on the other hand, on a lever extending, inside said body, the homologous lower limb of the upper limb



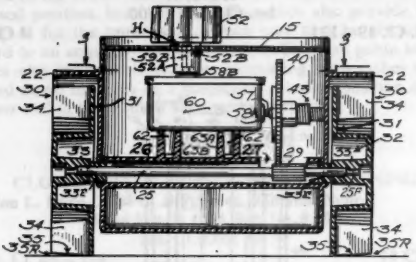
beyond its articulation axis. The upper limb, the connecting tube and the bellows are made of a flexible, elastic and airtight material.

3,600,846
VOTING GAME
Carmela Peters, 31 E. Gramercy Place, Glen Rock, N.J.
Filed Dec. 18, 1968, Ser. No. 784,636
Int. Cl. A63h *31/00*
U.S. Cl. 46—47 **5 Claims**



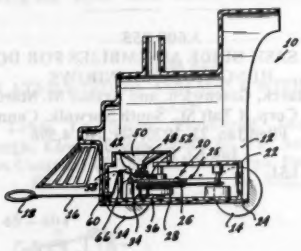
A voting game having a ballot box board on which is mounted a plurality of manually operative gear-actuating mechanisms. Each mechanism includes a handle which is depressed to move an integral pinion gear having gear teeth only for a portion of its circumference which in turn mesh with the gear teeth of a larger gear for rotating the larger gear in incremental angular steps. The larger gear having a decal with sequential numerals located around its peripheral face for viewing through a window located on the board. The pinion gear includes a coaxial integral circular wheel on which is located two detents on its circumferential face portion and in which a single-leaf flat spring, connected to the board, extends to drop within these detents to control the movement of the handle from a first to a second position for registering a vote when the handle is depressed. In addition, coaxial to the pinion gear is a main spring permitting continuous rotation of the handle when the flat spring is lifted off the detents.

3,600,847
TOY AMPHIBIOUS BOAT
Willis M. Lakin, Sante Fe, N. Mex., assignor to Marlin Toy Products, Inc., Horicon, Wis.
Filed Jan. 31, 1969, Ser. No. 795,604
Int. Cl. A63h 23/10
U.S. Cl. 46—96 10 Claims



A combination pull toy and boat having amphibious wheel structure driven by a motor contained in a watertight barnacle housing with socketed mounting means, and which is preferably also a music box and provides power for water and carriage propulsion with clutch means relieving the motor of counterdrive from the wheels when the toy is pulled.

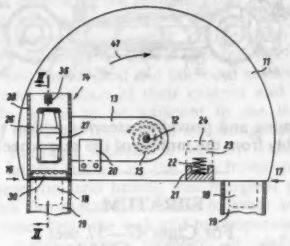
3,600,848
TALKING TOY VEHICLE
James E. Marshall, Westminster, and Anson Sims, Redondo Beach, both of, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Aug. 8, 1969, Ser. No. 848,661
Int. Cl. A63h 5/00
U.S. Cl. 46—111 6 Claims



A toy vehicle which moves forward along a drawstring toward a stationary pull ring as the phonograph plays, comprising a spring-powered phonograph within the vehicle that is wound by pulling out the drawstring. The drawstring retracts into the phonograph as a record is played, so the phonograph acts like a winch to move it along the drawstring. The phonograph includes a tone arm with a needle for playing the record, and a separate lift arm that lifts the tone arm and needle from the record and carries them to the periphery of the record as the drawstring is pulled.

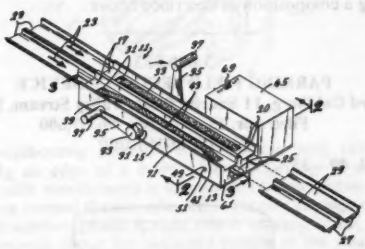
3,600,849
MODEL VEHICLES
Edwin Faller, Gutenbach, Germany, assignor to Gebr. Faller GmbH, Gutenbach, Germany
Filed Feb. 2, 1970, Ser. No. 7,874
Claims priority, application Germany, Feb. 4, 1969, P 19 05 261.0
Int. Cl. A63h 11/10
U.S. Cl. 46—202 23 Claims

A device for accelerating model vehicles comprises a track portion movable relative to a base part by resilient means. The track portion is held in a cocked position by a trigger mechanism and is released when a vehicle entering the track portion from an incoming track trips the trigger mechanism. A movable barrier, displaced by the entering vehicle falls



back behind the vehicle to accelerate the vehicle as the track portion is accelerated by the resilient means. The track portion may be movable in an arc through an angle, e.g. 180° about a vertical axis or in a circle about a horizontal axis or in a straight line.

3,600,850
ENDLESS BELT TOY ACCELERATOR
William F. Summerfield, Huntington Beach; Jack L. Barcus, Palos Verdes Pensisula; William R. Baynes, Palos Verdes Pensisula; Emerson W. Brigham, Jr., Hermosa Beach, and James I. Tucker, Jr., Manhattan Beach, all of, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Mar. 24, 1970, Ser. No. 22,269
Int. Cl. A63h 33/26
U.S. Cl. 46—243 M 23 Claims

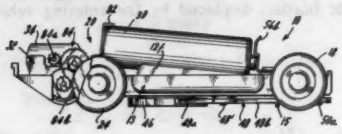


A continuously moving endless belt is mounted in a housing so that an upper elongated surface of the moving belt is adjacent and in registration with an elongated open channel centrally disposed in a roadway section supported by the housing. Also, a mechanism is provided which raises the upper elongated surface of the endless belt through the channel and into contact with the undersides of selected unpowered toy vehicles traveling on the roadway section in order to provide an acceleration force on the vehicles in the direction of travel. The height of the belt above the roadway section is adjustable to vary the ratio of the vehicles' weight shared by the belt and that of the raodway—the higher the proportion of the vehicles' total weight supported by the belt, the greater will be the acceleration thereof.

3,600,851
TOY VEHICLE
Edwin Nielsen, Oceanside, N.Y., assignor to Ideal Toy Corporation, Hollis, N.Y.
Filed Apr. 27, 1970, Ser. 29,384
Int. Cl. A63h 29/22
U.S. Cl. 46—244 D 5 Claims

A battery-operated toy vehicle with a programmed automatic front-wheel assembly steering mechanism. The vehicle includes a chassis with an insert plate mounting a motor cradle and a battery cradle, a motor and batteries for driving the

vehicle, a gear train for imparting motion to the rear wheels of the vehicle, a front-wheel assembly and drive train means



for programming and providing steering action to the front-wheel assembly from the motion of the rear wheels.

ERRATUM

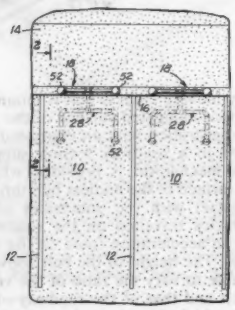
For Class 47—57 see:
Patent No. 3,600,830

3,600,852
HARDENABLE PLANT-SEED-CONTAINING COMPOSITIONS AND METHOD FOR ESTABLISHING PLANT GROWTH
William R. Burke, Tonawanda, and Donald R. Kole, Cheektowaga, both of, N.Y., assignors to National Gypsum Company, Buffalo, N.Y.
Filed May 26, 1969, Ser. No. 827,988
Int. Cl. A01c *1/00*
U.S. Cl. 47—58 **20 Claims**

A composition for distributing plant seeds over a soil surface and maintaining them in place until germination and plant growth occur is described comprising a major weight amount of a hardenable binder material and a minor weight amount of plant seeds.

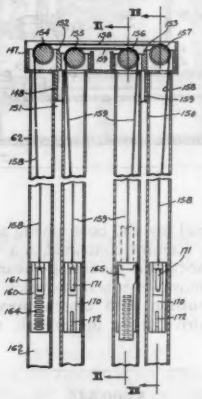
A method for establishing plant growth in a soil surface and concurrently preventing erosion of the soil surface employing a composition as described above.

3,600,853
PARKING FIELD SECURITY DEVICE
Leonard Goldberg, 11 Sunrise Plaza, Valley Stream, N.Y.
Filed Apr. 13, 1970, Ser. No. 27,600
Int. Cl. E01f *13/00*
U.S. Cl. 49—35 **6 Claims**



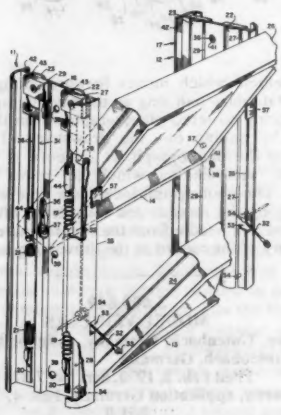
A security device for selectively blocking a parking space to prevent unauthorized use of the space. A stationary vertical support post is set into the pavement or ground outside and adjacent to the parking space. A movable barrier portion is pivotally secured to the support post to be swingable from an upper, vertical position in which the space is free for use by a vehicle, to a lower, horizontal position in which the barrier portion extends across a substantial portion of the parking space and blocks use thereof. Locking means may be provided to lock the barrier in either the horizontal or vertical positions, or both, to prevent unauthorized moving thereof.

3,600,854
COUNTERBALANCED WINDOWS FOR CURTAIN WALL SYSTEM
Raymond Dallaire, Levis, Quebec; Dominique Dallaire, Levis, Quebec, and Raymond Cote, Les Saules, Quebec, all of, Canada
Filed Oct. 31, 1968, Ser. No. 772,263
Claims priority, application Great Britain, Oct. 31, 1967, 49473/67
Int. Cl. E05f *17/00*
U.S. Cl. 49—121 **4 Claims**



A curtain wall system for buildings using a wooden frame in which fixed and movable panels are mounted, and provided with exterior coverings of extruded plastic applied to cover the exposed surfaces of the wooden frame. A counterbalanced double-glazed double-hung window forms a part of the system, and incorporates a novel counterbalanced supporting structure.

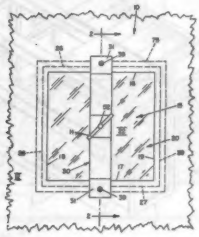
3,600,855
WINDOW SASH GUIDE ASSEMBLIES FOR DOUBLE-HUNG TILT-IN WINDOWS
William R. Starck, Greenwich, and Arthur M. Starck, both of c/o A.M.S. Corp. 4 Taft St., South Norwalk, Conn.
Filed Jan. 21, 1970, Ser. No. 4,596
Int. Cl. E05d *15/22*
U.S. Cl. 49—151 **11 Claims**



Economical sash guide assemblies incorporating guideways for the upper sash and the lower sash of double-hung win-

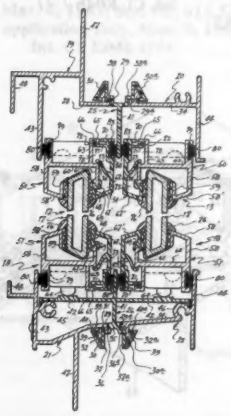
dows, with recessed grooves accommodating sash cords led over stationary top sheaves to connect to extensible helical coil tension balancing springs enclosed in vertically elongated recessed cavities behind the sash guides, for counterbalancing extension and retraction in response to window sash movement by the user. These sash guide assemblies incorporate a sash cord portal permitting tilt-in pivoting movement of the lower sash about its lower edge in its lowermost, closed position. Inwardly extending studs also provide tilted support for the upper sash, which may thus be pivoted inward to an angularly slanted position. The sash guide assemblies also incorporate features permitting both sashes to be tilted down inwardly to a horizontal cleaning position at the lower end of the window sash guide assemblies.

3,600,856
CLOSURE MECHANISM FOR PANEL OPENING
Eldon L. Burn, 2717 S. 107th Ave., Omaha, Nebr.
Filed Feb. 9, 1970, Ser. No. 9,597
Int. Cl. E05f *11/34*
U.S. Cl. 49—324 **10 Claims**



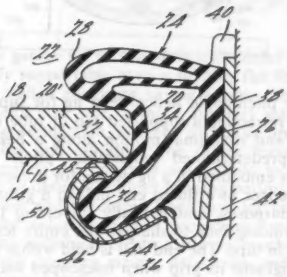
This invention relates to a closure mechanism for panel openings and comprising a plate member, a central portion of which is mounted onto a transversely reciprocatable plunger means whereby the plate member is maintained in substantial parallelism with the plane of the panel opening both during the "open" and "closed" conditions of the panel opening.

3,600,857
INSULATED WINDOW ASSEMBLY WITH MOVABLE SASH
Robert Lewis La Barge, Pittsburgh, and Paul Noble Vosburgh, Lower Burrell, both of, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.
Filed June 11, 1969, Ser. No. 832,131
Int. Cl. E06b *1/32*
U.S. Cl. 49—404 **17 Claims**



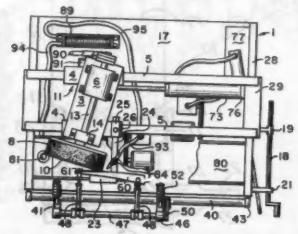
In a window assembly having an outer frame within which inboard and outboard lapping sashes are mounted for horizontal or vertical relative movement, the outer frame includes interior and exterior metal frame members and a rigid plastic or other nonmetallic thermal barrier member therebetween connecting the metal frame members in thermally insulated relation to each other, each sash includes an inner frame embracing the periphery of a glass or other panel and constituted by a metal frame member and a rigid plastic or other nonmetallic thermal insulating frame member respectively defining the entire opposite lateral surfaces of the frame, and the inboard and outboard sashes have their insulating frame members at their exterior and interior sides, respectively, so as to be adjacent to the thermal barrier member of the outer frame. The insulating frame member of each sash desirably includes a web or webs defining the respective lateral surface of the sash frame and flanges extending therefrom and having free marginal portions interlocking with the metal sash frame member to substantially space the latter from the web and to cooperate with the web and the metal frame member in defining cavities therebetween.

3,600,858
WEATHERSTRIP ASSEMBLY
Charles L. Savell, Warren, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Nov. 10, 1969, Ser. No. 875,132
Int. Cl. E06b *7/23*
U.S. Cl. 49—488 **4 Claims**



A weatherstrip assembly for a vehicle body rail section defining an edge of a body window opening. A resiliently deformable weatherstrip is secured to the rail section and has a groove formed therein adapted to receive an edge of an unframed window panel. A rigid clip is secured to the rail section, extends about the outboard profile of the weatherstrip and projects into the weatherstrip groove where it bears against the outboard surface of the window panel and prevents window panel outboard movement.

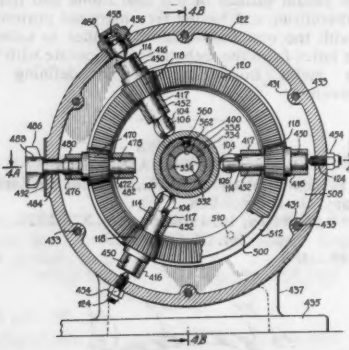
3,600,859
TOOL-SHARPENING APPARATUS
Darwin D. Edgecomb, General Delivery, Avoca, Iowa
Filed June 2, 1969, Ser. No. 829,180
Int. Cl. B24b *3/00, 5/18*
U.S. Cl. 51—48 HE **5 Claims**



A semiautomatic grinding-sharpening machine for sharpening surfaces with a helical configuration is disclosed. The

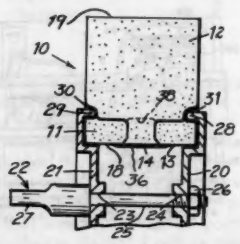
machine is self-supporting, only electric power need be supplied. It includes an adjustable holder for positioning the workpiece being sharpened, a reciprocating grinding mechanism, and a self-contained coolant supply.

3,600,860
ADJUSTABLE ANGLE HELIX GENERATOR FOR EDGE AND RADIAL RELIEF SHARPENING
Warren Harding Liepold, 134 Liberty St., Pawcatuck, Conn.
Filed July 14, 1969, Ser. No. 841,407
Int. Cl. B24b *47/02*
U.S. Cl. 51—232 **25 Claims**



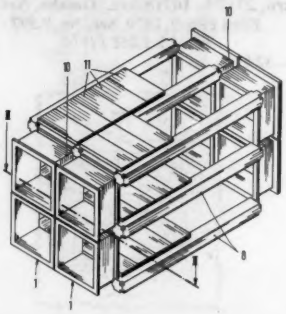
A variable pitch-angle helical-feed jig for supporting, advancing and retracting a supported rod or tube in combined longitudinal and rotational motion along a helical path of travel of predetermined adjustable pitch angle. the mechanism is embodied in a jig device for presenting successive cutting edges of a fluted end mill to a grinding mill for sharpening purposes, and helically traversing the end mill across the grinding face to sharpen the entire length of each cutting edge in turn. The end mill is held within a collet-type chuck that tightens its grip when telescoped within an inner tube which in turn is held inside a carrier tube. The inner tube is rotatable relative to the carrier tube for angularly indexing the end mill so as to present successive cutting edges thereof to the grinding wheel. The entire length of each cutting edge is helically traversed across the wheel by the action of three adjustable pitch rollers which convert manually imparted rotary or longitudinal motion of the carrier tube into a helical advance. The pitch angles of all rollers are adjusted simultaneously, so that the helical pitch of the carrier tube advance can be made equal to that of the end mill cutting edges.

3,600,861
ABRASIVE WHEELS
George L. Haywood, Latham, N.Y., assignor to Norton Company, Troy, N.Y.
Filed Oct. 30, 1969, Ser. No. 872,564
Int. Cl. B24b *9/02*
U.S. Cl. 51—334 **7 Claims**



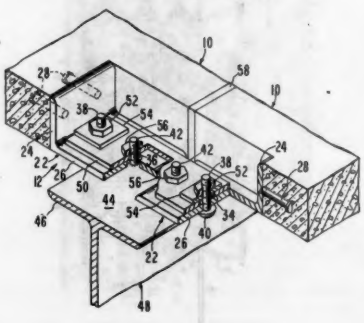
An abrasive wheel is provided wherein coated abrasive segments are arranged annularly in interlocking pairs. Such interlocking makes it possible to assemble a greater number of abrasive segments in the wheel thus providing an abrasive wheel of improved performance.

3,600,862
PROCEDURE AND PRECAST BUILDING ELEMENTS MADE OF CONCRETE OR REINFORCED CONCRETE FOR THE CONSTRUCTION OF BUILDINGS OR SKELETONS
Gunther Ludwig Eckert, Hohenschaftlarn, Germany, assignor to Ernst Kirchhoff, Munich-Solln, Germany
Continuation of application Ser. No. 685,772, Nov. 27, 1967, now abandoned. This application Dec. 8, 1969, Ser. No. 878,999
Int. Cl. E04b *2/38, 2/52, 5/08*
U.S. Cl. 52—236 **15 Claims**



A skeleton for a building comprising precast frame-shaped elements and precast horizontal support beams which rest on the frame-shaped elements. The frame-shaped elements are placed along at least two mutually facing outer sides of the building and in adjacent or superposed relationship to form intermediate spaces therebetween. The precast horizontal beams are placed on the intermediate edges of the adjacent frame elements and cast in situ concrete is placed in the intermediate spaces defined between the frame-shaped elements.

3,600,863
CONCRETE SLAB WITH IMPROVED FASTENING MEANS
Marvin G. Nachtsheim, Palo Alto, Calif., assignor to National Parking Corporation, San Francisco, Calif.
Filed Sept. 8, 1969, Ser. No. 855,915
Int. Cl. E04b *1/41*
U.S. Cl. 52—483 **11 Claims**



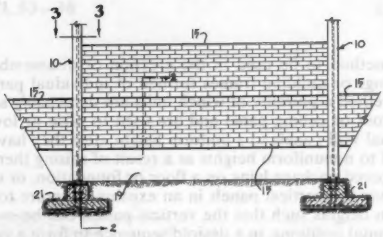
A concrete slab having a number of peripheral recesses and fastening means disposed in each recess, respectively. In

one embodiment, the fastening means includes an angle member having one portion secured to the slab and a second portion with holes therethrough for receiving mounting studs. A connector plate is provided to interconnect the studs passing through the angle members of adjacent slabs. In a second embodiment, the fastening means includes an angle member rigidly secured to the slab and having an angle element rigidly secured thereto to define a space for receiving a bolt. The slab is adapted for use in a number of different building applications and is particularly suitable for use in forming the floor of a building.

3,600,864
PRECAST PANEL, BUILDING WALL CONSTRUCTION AND METHOD

Fred O. Godley, and Fred D. Godley, both of Charlotte, N.C., assignors to Beauti-Brik Corporation, Charlotte, N.C.

Filed July 22, 1969, Ser. No. 843,419
Int. Cl. E04b *2/58*
U.S. Cl. 52—495 **2 Claims**

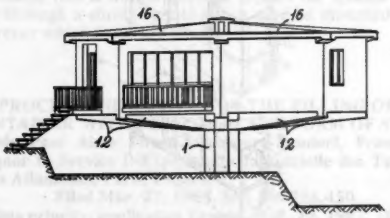


A precast panel, building wall and method of erecting the same wherein the panels are mounted to extend between adjacent pairs of column members for forming the entire thickness of a building wall intermediate the adjacent column members and with distal end portions of the panels received within a corresponding pair of opposing, facing channels in the column members, the panels being secured in place within the column members by clamping means engaging the panels and the column members.

3,600,865
ELEVATED SINGLE COLUMN-BORNE HOUSE OF PRECAST CONCRETE ELEMENTS AND POSTTENSIONED TENDONS

Francesco Vanich, 67, via Chiodo, La Spezia, Italy

Filed Mar. 4, 1969, Ser. No. 812,525
Claims priority, application Italy, Mar. 9, 1968, 6867A/68
Int. Cl. E04b *1/34*
U.S. Cl. 52—73 **8 Claims**

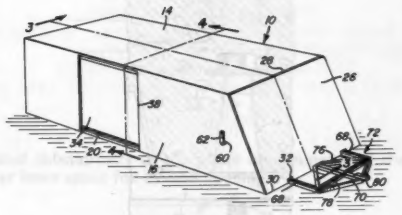


Single column-borne elevated house units are erected by assembling, on a cast-in-situ foundation pillar, column sections provided with means for fastening same together and to the foundation pillar and by fastening to said column sections radially arranged cantilever beams. The assembled parts are fastened together and to the foundation pillar by means of tendon sections which are first coupled together by means of joints, and then tensioned and eventually bonded to the concrete of the assembled parts by forcing grout in the clearance spaces all around the tendon rods.

3,600,866
PORTABLE GARAGE

Edward J. Griffith, 4558 Wentworth Drive, Rapid City, S. Dak.

Filed Mar. 20, 1969, Ser. No. 808,771
Int. Cl. E04h *6/04*
U.S. Cl. 52—64 **5 Claims**

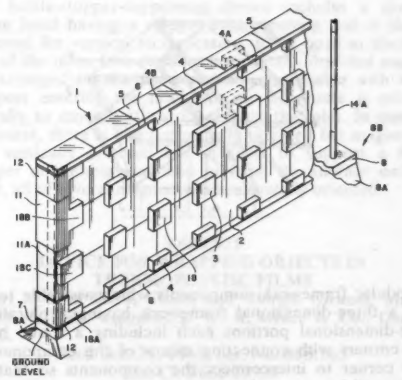


A portable garage for trailer camp and similar use having a bottom firmly supportable atop a suitably flat foundation. It comprises a walled enclosure having a main hinged door at its entrance-exit end, one or more auxiliary sidewall doors, and a linking connection whereby all doors are simultaneously openable and closable. The driver leaves and subsequently reenters the enclosed automobile by way of the sidewall door or doors. The floor-forming bottom is equipped with guide rails and bordering trackways for centering and positioning the automobile. The projecting forward end of the rail means is fashioned into a towing bracket equipped with trailer-type coupling means. Attachable and detachable dolly wheels are installed when the garage is hitched to a towing car for traveling.

3,600,867
BUILDING BLOCK CONSTRUCTION AND ASSEMBLAGE

Bernice W. Shuey, 3323 Latham Drive, Dallas, Tex.

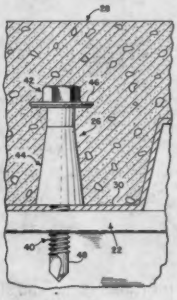
Filed Oct. 16, 1969, Ser. No. 866,856
Int. Cl. E04b *1/40, 1/70*
U.S. Cl. 52—284 **5 Claims**



This product is a novel structure for providing an easy to assemble and disassemble masonary or other material wall

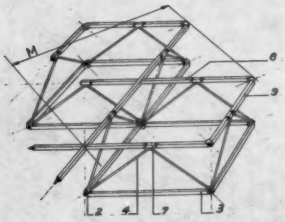
that is virtually free of mortar. This structure may be quickly assembled by unskilled persons, and yet provides the appearance of a continuous professionally laid masonary wall. The individual masonary blocks cooperate with joining elements that provide both holding means and attractive surface display.

3,600,868
SHEAR CONNECTORS
Edgar Clifton Wilson, Jr., Elgin, and Friedrich Karl Knohl, Roselle, both of, Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.
Filed Feb. 28, 1969, Ser. No. 803,222
Int. Cl. E04b 1/48; F16b 43/00
U.S. Cl. 52—336 17 Claims



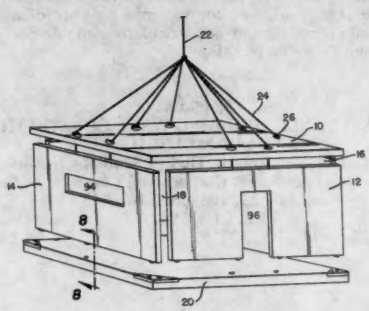
A shear fastener for securing concrete decking relative to a supporting structure in a laminar building structure. The fastener includes a stud, an enlarged means at one end, and a spacer adapted to enclose the stud shank and isolate it in spaced relation from the encapsulating concrete to permit bending moments to be applied to the stud shank rather than a straight shear stress when the decking shifts relative to the supporting structure.

3,600,869
MODULAR FRAMEWORK COMPONENTS
Leon Petroff, 50 rue Felix Merlin 93, Epinay sur Seine, France
Filed Mar. 10, 1969, Ser. No. 805,635
Claims priority, application France, Mar. 12, 1968, PV 143 300
Int. Cl. E04b 5/14; E04c 3/02
U.S. Cl. 52—650 15 Claims



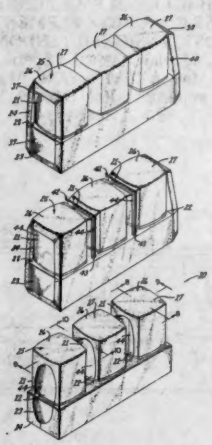
Modular framework components which assemble to provide a three-dimensional framework having a plurality of three-dimensional portions each including a frame having four corners with connecting means of the components at each corner to interconnect the components so that said frames will be arranged corner-to-corner in a matrix formation with the corner-to-corner diagonals of said frames extending in the row and column directions of said matrix formation.

3,600,870
BUILDING ERECTION METHOD
William Greenhalgh, P.O. Box 521, Oshawa, Ontario, Canada
Division of Ser. No. 811,566, Mar. 28, 1969, Pat. No. 3,527,008.
Filed May 6, 1970, Ser. No. 35,158
Int. Cl. E04g 21/14; B66c 1/10
U.S. Cl. 52—745 4 Claims



A method to be used in the erection or disassembling of buildings or quilding frames formed of individual panels. In the method a plurality of winch units are detachably secured to a roof or ceiling panel and are used to raise or lower individual wall panels to a uniform height after they have been raised to nonuniform heights as a result of raising them from a prepared package lying on a floor or foundation, or to raise or lower the vertical panels in an existing structure to nonuniform heights such that the vertical panels can be swung to horizontal positions, in a desired sequence to form a collapsible structure suitable for collapsible structure suitable for collapsing and packaging for removal to another site for erection again.

3,600,871
METHOD OF MAKING PACKAGE CONSTRUCTION FOR PLURALITY OF ARTICLES
Melville T. Farquhar, Bon Air, Va., assignor to Reynolds Metals Company, Richmond, Va.
Division of Ser. No. 604,383, Dec. 23, 1966, Pat. No. 3,490,582.
Filed Sept. 9, 1969, Ser. No. 856,318
Int. Cl. B65b 11/00, 53/02
U.S. Cl. 53—3 36 Claims



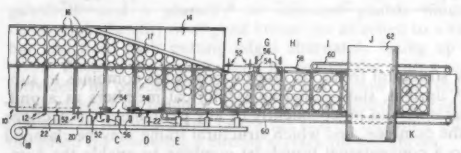
This disclosure relates to a package construction wherein a plurality of articles are held in a predetermined arrangement

by a filmlike member having a portion thereof engaging against the upper ends of the articles with that portion being separated into a plurality of parts respectively engaging the upper ends of the articles so that the articles can be held in such predetermined arrangement without having the upper ends drawn toward each other and can be serially removed from the package construction by causing relative movement between the respective engaging part of the portion of the filmlike member and the package construction while the remaining articles are being maintained in the predetermined arrangement by the remaining parts of the filmlike member, the filmlike member being heat shrunk to hold and compact the articles in their predetermined arrangement together with or without a support member supporting the other ends of the articles, depending on the shape of the articles, and being compacted against the other ends of the articles by the heat shrunk filmlike member.

3,600,872
METHOD OF MAKING A PACKAGE

Edwin V. Sharpnack, Jr., Somerdale, N.J., assignor to Reynolds Metals Company, Richmond, Va.

Filed Sept. 29, 1969, Ser. No. 861,887
Int. Cl. B65b *39/14, 43/36, 53/02*
U.S. Cl. 53—30 **1 Claim**



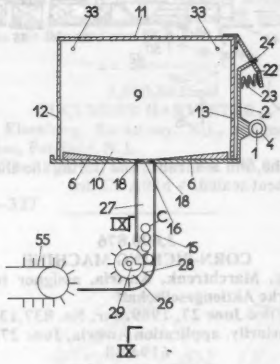
A blank construction for making packages which contain a plurality of articles. The blank comprises a flat, paperboard base member and a sheet of heat shrinkable film secured to one surface of the base member. In accordance with the method of forming the blank, air is blown between the shrinkable film and the base member to provide a sufficiently large opening to permit the lateral insertion of groups of articles. The apparatus includes parallel feeding conveyors whereby packages may be formed continuously with cam means being provided to impart the lateral movement to the groups of articles. After the articles are in place, the heat shrinkable film is shrunk over the tops of the articles as they pass through a shrink tunnel which may be mounted on the conveyor which feeds the blanks.

3,600,873
PROCESS AND DEVICE FOR THE FILLING OF A CONTAINER WITH OBJECTS IN THE FORM OF STICKS

Claude Paul Aime Pirat, Strasbourg-Neudorf, France, assignor to Service D'Exploitation Industrielle des Tabacs et des Allumettes, Paris, France

Filed Mar. 27, 1968, Ser. No. 716,450
Claims priority, application France, Mar. 29, 1967, 100,660
Int. Cl. B65b *5/10, 19/00*
U.S. Cl. 53—35 **7 Claims**

Process for the filling of a container, normally open in its top portion which is tipped downwards in such a way that the objects may be introduced at the bottom, comprising the steps of closing said open portion to prevent the objects introduced into said container to escape therefrom, and introducing the objects through at least one intake opening

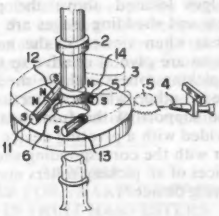


located substantially in the plane of symmetry of the container inner space fed by said opening.

3,600,874
BOTTLE-STOPPER-SUPPORTING DEVICE

Sadao Noguchi, and Masatoshi Suzuki, both of Nagoya, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 3, 1969, Ser. No. 813,154
Claims priority, application Japan, Apr. 10, 1968, 43/23333
Int. Cl. B65b *7/28;* **B67b** *3/06*
U.S. Cl. 53—306 **7 Claims**



A bottle-stopper-supporting device includes a stopper-fitting head having a stopper inlet opening and a plunger mounted for vertical reciprocation in the head at the inner end of the inlet. One or more horizontally oriented magnets are arranged on the head and are cooperable with bottle stoppers entering the inlet. An air jet nozzle is oriented laterally to move bottle stoppers into the inlet. In one embodiment, there is one horizontally oriented bar magnet and two vertically oriented bar magnets to support a bottle stopper containing magnetic material. In another embodiment, all of several magnets are horizontally oriented.

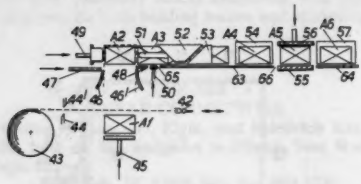
3,600,875
DEVICE FOR WRAPPING OBJECTS IN THERMOPLASTIC FILMS

Robert Konrad Buob, Como, and Giorgio Giraudi, Milano, both of, Italy, assignors to W. R. Grace & Co., Duncan, S.C.

Filed Oct. 21, 1969, Ser. No. 868,103
Int. Cl. B65b *53/00*
U.S. Cl. 53—30 **10 Claims**

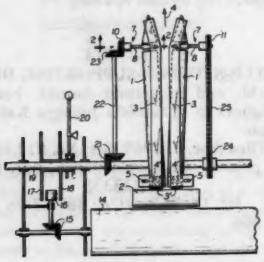
A packaging apparatus and a method in which an object wrapped in a thermoplastics film is subject to three heating steps, each step taking place at a higher temperature than the

previous one. During the first heating step the film is heated only sufficiently to maintain it in a wrapped condition; during



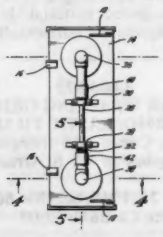
the second the film is shrunk; and during the third the film is completely heat-sealed.

3,600,876
CORN-PICKING MACHINE
Hans Tanzer, Marchtrenk, Austria, assignor to Epple-Buxbaum-Werke Aktiengesellschaft
Filed June 27, 1969, Ser. No. 837,131
Claims priority, application Austria, June 27, 1968, A 6194/68
Int. Cl. A01d *45/02*
U.S. Cl. 56—11.2 **7 Claims**



A corn-picking machine having picking rollers and shedding ledges located above the picking rollers. The picking rollers and shedding ledges are pivotally mounted at their rear ends when viewed in the moving direction. The shedding ledges are pivotal relative to the rollers. The front ends of the picking rollers and the shedding ledges are connected with each other, which connection is preferably disengageable The support of the front bearing of each picking roller is provided with a pivoting device for pivoting the support together with the corresponding shedding ledge, and the pivoting devices of all picking rollers may be operated by one common driving device.

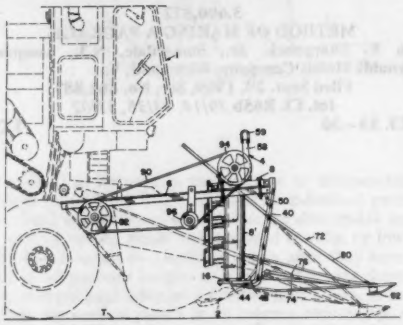
3,600,877
STRIPPING-SHREDDING METHOD AND APPARATUS
Donald E. McCrary, and James J. Lee, both of Rte. 1, Venus, Tex.
Filed May 2, 1969, Ser. No. 821,225
Int. Cl. A01d *35/26*
U.S. Cl. 56—10.3 **2 Claims**



A method for harvesting an agricultural product such as cotton by removing the product from its plant and concurrently shredding the plant. A shredding apparatus is provided

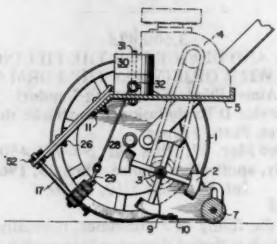
to be supported and driven by harvesting machinery and comprises a housing for attachment to the harvesting machinery, upright shafts journaled in the housing for rotative movement, a blade secured to the lower end of each upright shaft, a drive shaft journaled to the housing for rotation by the harvesting machinery, gear means transmitting rotative movement from the drive shaft to each upright shaft and clutch means operatively engaged between the drive shaft and each upright shaft.

3,600,878
DEMOUNTABLE, UNITIZED ROW CROP GATHERING UNIT FOR BROADCAST COMBINES
Roy Durward Lynch, 903 Jefferson Drive, Plainview, Tex.
Filed May 13, 1969, Ser. No. 824,112
Int. Cl. A01d *45/02*
U.S. Cl. 56—119 **9 Claims**



A structural frame for use on broadcast combines to support upright, stalk-gathering cylindrical members as a unit, separately and independently of any permanent connections to the combine, and which structural frame may be clamped onto a conventional broadcast combine to enable the combine to be converted into a row-harvesting unit. Four bolt clamps connect the structural frame to the combine and by connecting an endless-drive member having a transverse shaft mounted thereon, enables ready use thereof. Complementary pairs of upright cylindrical members, mounted on the combine, are rotated in opposed relation to direct stalks of row crops, such as maize, kafir corn, corn, legumes and the like, into the sickle of the combine. Provision is made to truss the structural frame to enable the unit to be supported on the combine above the sickle thereof in rigid relation. Further provision is made to enable the removing and replacing the entire unit, by the use of a hoist, in a minimum of time.

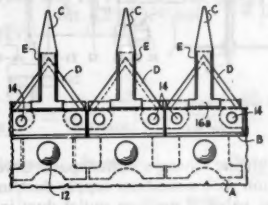
3,600,879
LAWNMOWER ATTACHMENT
Fred Coffman, 820 Fox Hill Drive, Ruskin, Fla.
Filed Oct. 23, 1969, Ser. No. 868,842
Int. Cl. A01d *55/20*
U.S. Cl. 56—249 **10 Claims**



There is disclosed a racking or combing attachment for a lawnmower having a frame member above and ahead of the

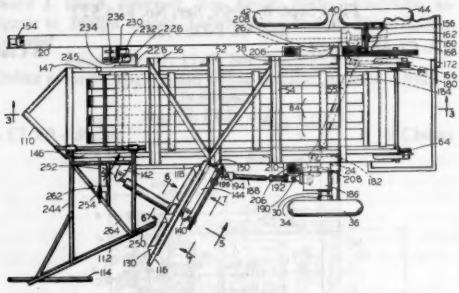
mower's cutting means and which attachment includes a transversely extending crossbar means, a plurality of teeth secured to such crossbar means to extend therefrom in a common plane and means securing the crossbar means to the frame member in such fashion that the common plane containing the teeth is disposed in advance of the cutting means and at a downward and rearward angle that intersects the ground in advance of the cutting means. As a specific aspect, the teeth have heads thereon that facilitate the raising of grass and disruption of matted grass formations.

3,600,880
MOWER GUARD
Grover L. Woods, P.O. Box 5612, Greenville, S.C.
Filed Sept. 29, 1969, Ser. No. 861,878
Int. Cl. A01d *55/02*
U.S. Cl. 56—298 **1 Claim**



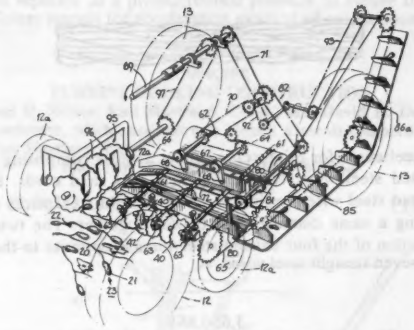
A cutting apparatus for a mower including an elongated guardrail, and a plurality of cast-iron guards mounted thereon. A plurality of aligned knives are attached to a sickle bar and have their cutting edges alternately facing up and down. Each of the guards has a horizontal slot with a recess provided in opposed sides above and below the slot. A casehardened rectangular plate is carried above the slot on one side of the guard and below the slot on the other side of the guard for providing a cutting surface for the knives.

3,600,881
PUMPKIN HARVESTER
Wellington W. Porter, R. D. #2, Dublin Road, Waterloo, N.Y.
Filed Dec. 15, 1969, Ser. No. 885,154
Int. Cl. A01d *45/00*
U.S. Cl. 56—327 **8 Claims**



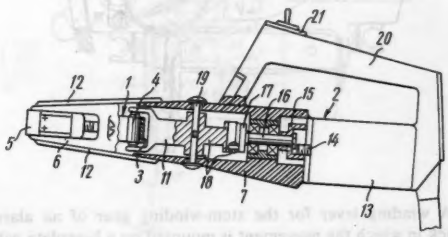
Harvester for rows of pumpkins comprising an elevator having a plurality of guide slats disposed in spaced side-by-side relation, with forward portions extending forwardly and horizontally along the ground, and inclined rearward portions extending upwardly to an elevator discharge area, and side parallelogram-like frames having opposed facing conveyor chain channel member guides, the guides extending along the ground on opposite sides of the forward portions, and the inclined portions extending parallel with the slat inclined portions and disposed at a substantial spacing normal therefrom, endless chains having conveyor pusher bars at evenly spaced intervals extending transversely across the slats, the bars moving along the forward slat portions to move the harvest toward the inclined portion, and thereafter moving upwardly in spaced relation from the inclined rearward portion of the slats to propel the harvest up the inclined slats to the discharge area, a radially ribbed impeller wheel disposed to one side of the elevator and adapted to move pumpkins laterally onto the forward slat portions.

3,600,882
CUCUMBER HARVESTER
Bernard C. Eisenberg, Rockaway, N.J., assignor to Solbern Corporation, Fairfield, N.J.
Filed Jan. 27, 1969, Ser. No. 794,054
Int. Cl. A01d *45/00*
U.S. Cl. 56—327 **34 Claims**



A method of and apparatus for harvesting cucumbers from a vine wherein means are provided for lifting the vines from the ground and conveying them through the machine at a speed relative to the machine and substantially equal and opposite to the speed of the machine relative to the ground, whereby the vines may be passed through the machine without disturbance of their root end. The vines are engaged and passed through the machine to a reciprocating striking member. As the vines slidably pass through the machine, the striking member engages the matured cucumbers and peels the stem therefrom which attaches the cucumbers to the vines. The severed cucumbers are subsequently conveyed to a storage member toward the rear of the machine.

3,600,883
WORKING MEMBER FOR SHAKING OFF FRUITS TO BE USED IN FRUIT HARVESTERS
Lev Mikhailovich Piljugin, N121SNP, 14, Kv. 16, Moscow; Albina Demianovna Krivonosova, N121SNP, 9, Kv. 24, Moscow; Nikolai Petrovich Gavriljuk, Benderskaya. 30, Kv. 7, Kishinev, and Jury Andreevich Utkov, N121SNP, 7, Kv. 6, Moscow, all of, U.S.S.R.
Filed Mar. 5, 1969, Ser. No. 804,413
Int. Cl. A01g *19/00*
U.S. Cl. 56—330 **5 Claims**



A working member for shaking off fruits for use in fruit harvesters including a flexible elastic V-shaped element con-

nected at its base to a vibrator imparting oscillatory motion thereto, and the ends of the elastic element being immobile relative to the plane of oscillation of the elastic element.

3,600,884

STEEL CORD FOR REINFORCING RUBBER ARTICLES

Akiyoshi Yazawa, Tokyo; Reizo Fujisaki, Tokyo, and Yoshimi Nakamura, Ashiya, all of, Japan, assignors to Bridgestone Tire Company Limited, Tokyo and Kobe Steel Limited, Kobe, Japan

Filed Mar. 6, 1969, Ser. No. 804,779
Claims priority, application Japan, July 9, 1968, 43/57986
Int. Cl. D02g *3/48*
U.S. Cl. 57—139 3 Claims

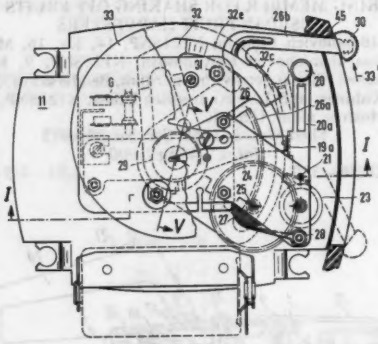
Steel cords for reinforcing rubber articles comprising four twisted steel wires twisted together into steel cords. Each twisted steel wire consists of seven straight steel wires each having a same diameter and twisted together. The twisting direction of the four twisted steel wires is opposite to that of the seven straight steel wires.

3,600,885

LEVER WINDING FOR ALARM CLOCK STEM-WINDING GEAR

Robert Wolber, Lautenbach/Wurttemberg, and Otto Hettich, Schramberg/Wurttemberg, both of, Germany, assignors to Messrs. Gebruder Junghans GmbH, Schramberg/Wurttemberg, Germany

Filed Apr. 17, 1968, Ser. [illegible]721,964
Claims priority, application Germany, Apr. 28, 1967, J 33568
Int. Cl. G04b *23/00*, *3/00*
U.S. Cl. 58—16 3 Claims



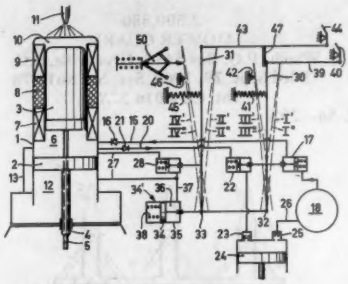
A winding lever for the stem-winding gear of an alarm clock in which the movement is mounted on a baseplate with the winding lever mounted thereon and arranged coaxially with the shafts of the hands of the movement.

3,600,886

HOT GAS ENGINE

Hendrik Alphons Jaspers, and Gregorius Theodorus Maria Neelen, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 4, 1969, Ser. No. 855,170
Claims priority, application Netherlands, Sept. 7, 1968, 6812816
Int. Cl. F25b *9/00*
U.S. Cl. 60—24 11 Claims



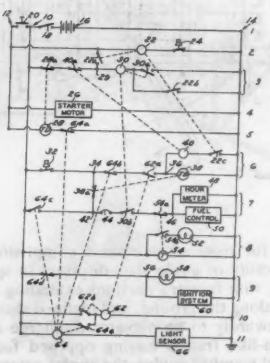
A hot gas engine having a buffer space, a working space in communication with a medium supply duct including a controllable inlet valve, a medium outlet duct including a controllable exhaust cock, a communication duct including a bypass valve between the working space and buffer space, a first control device which is movable against the action of a spring for operating the inlet and exhaust valves, and a second control device which is movable against the action of the spring for operating the bypass valve, the control devices being constructed so that during normal operation a movement of the second control device is associated with the same movement of the first control device, while upon braking with the engine the bypass valve is maximally opened and by moving the first control device only the inlet cock can be opened to provide a maximum braking torque.

3,600,887

ELECTRICAL STARTING AND OPERATING SYSTEM FOR GAS TURBINE ENGINE

Robert L. Gault, Garden City, and Thomas M. Sebestyen, Ann Arbor, both of, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sept. 8, 1969, Ser. No. 856,527
Int. Cl. F02c *7/26*
U.S. Cl. 60—39.14 8 Claims



A flame sensor deactivates the ignition system of a gas turbine engine as soon as a flame is detected in the combustion

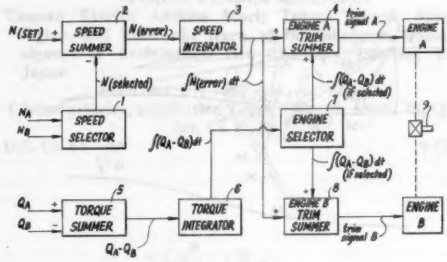
chamber during engine starting. The starter motor is disengaged automatically when gas generator speed approaches its idling speed. If a flameout occurs before the starter disengages, fuel flow to the engine is halted immediately and the starting cycle is aborted. The starting cycle also is aborted if the initial flame does not appear within a predetermined time. If a flameout occurs at idling speed, one relighting attempt of predetermined time duration is attempted. If a flameout or an overtemperature condition occurs during road load operation, the system immediately stops fuel flow to the engine but resumes fuel flow and attempts one relighting when gas generator speed gas generator speed has declined approximately to idling.

3,600,888

POWER MANAGEMENT CONTROL FOR A MULTIENGINE INSTALLATION

Harley F. Nethken, North Palm Beach, and Thomas R. Warwick, Jupiter, both of, Fla., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed May 12, 1970, Ser. No. 36,522
Int. Cl. F02c *7/02*
U.S. Cl. 60—39.15 **7 Claims**



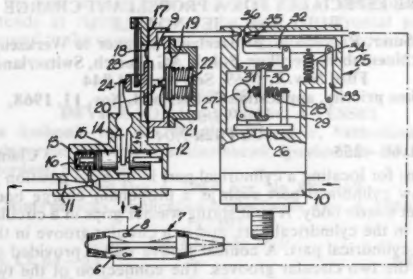
A power management control in which the output of a speed error integrator and the output of a torque balance integrator are summed in such a manner as to selectively "beep," that is adjust, the power of both engines up or down to correct speed error and to "beep" up the power of the engine with the lower torque to equalize the load on each engine. The invention herein described was made in the course of or under a contract with the Department of the Army.

3,600,889

FUEL CONTROL SYSTEM FOR GAS TURBINE ENGINES

Richard J. Ifield, Beecroft, New South Wales, Australia, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed June 17, 1969, Ser. No. 833,921
Claims priority, application Great Britain, June 24, 1968, 29,924/68
Int. Cl. F02c *9/10*
U.S. Cl. 60—39.28 **9 Claims**



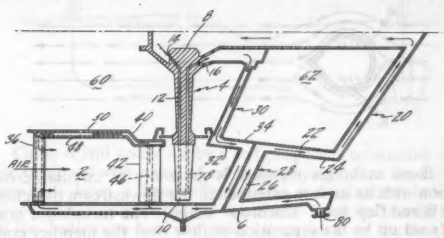
A system for controlling the fuel supply to a gas turbine engine includes a valve between the fuel pump and the burners of the engine and arranged to spill fuel delivered by the pump. Fuel flows to the burners via a venturi and the spill valve is urged in a direction to spill fuel by the pressure upstream of the venturi and in the other direction by a spring-assisted piston subjected to the pressure at the venturi throat. Cooperating with the spring-assisted piston is a lever actuated by a diaphragm forming one wall of a chamber which is subjected to an air pressure signal derived from the output of the engine compressor and modified by a blade movable in a kinetic orifice. The blade is movable by a governor mechanism and a linkage coupled to the engine throttle control, so that the blade is moved to reduce the pressure in the chamber when the desired engine speed is greater than the actual speed, and thereby move the lever so that the spill valve may operate to increase spillage of fuel. The valve is similarly operated to reduce spillage when the desired speed is greater than the actual speed. An opposite wall of the chamber is formed by a smaller diaphragm biased towards the first diaphragm by a spring. Stops on the respective diaphragms maintain them in spaced relationship. These stops separate at a predetermined pressure to ensure that a sufficient margin for acceleration exists at all engine speeds.

3,600,890

TURBINE COOLING CONSTRUCTION

Loren H. White, East Hartford, Conn., and David K. Dorer, Rochester, Mich., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Nov. 29, 1968, Ser. No. 780,944
Int. Cl. F02c *7/12*
U.S. Cl. 60—39.66 **1 Claim**



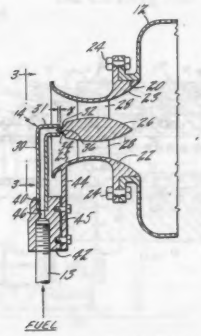
A turbine cooling construction for use in a gas turbine engine which permits the use of stoichiometric temperatures within the turbine. More specifically, an inlet turbine temperature in excess of 3,000° F. may be utilized.

3,600,891

VARIABLE AREA NOZZLE

Richard E. Gordon, North Palm Beach, Fla., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Dec. 18, 1969, Ser. No. 886,239
Int. Cl. F02c *3/24*
U.S. Cl. 60—39.74 **11 Claims**



A fuel supply system for turbine engines whereby a plurality of variable area fuel nozzles are placed around the circum-

ference of a combustion section. Each nozzle is placed so as to direct fuel therefrom into an inlet passageway. Each inlet passageway generally forms a venturi section and has a fixed valve member positioned therein by a plurality of swirl vanes. Each nozzle has a short tubular member with one open end aligned with the fixed valve member. The adjacent ends of the tubular member and valve member being in contact when there is no flow in the tubular member. The other end of the tubular section is fixed to a radially extending tubular member which is fixed at its opposite end to fixed structure of the engine. The radially extending tubular member is formed to act as a cantilevered spring to provide for a valve action between the adjacent ends of the tubular member and valve member. The spring rate being predetermined so that the exit area of the nozzle will vary to provide for a desired opening size for a given force acting thereon by the fuel passing therethrough.

3,600,892

COMBUSTION DEVICES

William Dean Bryce, Farnham, England, assignor to Minister of Technology in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland

Filed June 4, 1969, Ser. No. 830,394

Claims priority, application Great Britain, June 10, 1968, 27,396/68

Int. Cl. F02g *1/00*

U.S. Cl. 60—39.72 **14 Claims**

A flame stabilizer member is generally of circular cross section with its surface extended in the downstream direction as a faired flap (i.e., "teardrop" shape). The turbulence normally set up by the separation of flow over the member constitutes a flame stabilization zone. Separation can be prevented by applying suction to holes formed in the surface of the stabilizer, the turbulent zone being thereby suppressed and drag reduced. In a typical arrangement, annular stabilizing members are supported by a spider of hollow elliptical struts connected to a suction source and carrying fuel spray tubes upstream of the stabilizing members.

3,600,893

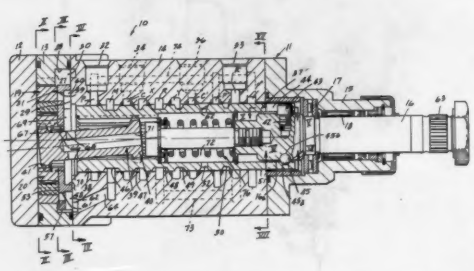
HYDRAULIC DEVICE HAVING PRESSURE DAM VALVE MEANS

Bernard C. Hudgens, West Lafayette, Ind., assignor to TRW Inc., Cleveland, Ohio

Filed Feb. 16, 1970, Ser. No. 11,408

Int. Cl. F15b *15/18*

U.S. Cl. 60—52 S **10 Claims**



A manually actuated hydraulic meter-pump device for controlling the operation of a hydraulic servomotor. The device includes a cylindrical sleeve valve carried for axial and rotational movement in a bore wall. The sleeve valve is shifted axially in opposite directions to provide movement of the servomotor in opposite directions and comprises a series of axially spaced circumferential lands and grooves which cooperate with a series of similar lands and grooves in the bore wall to control the flow of fluid through the device. Since the fluid pressure in adjacent grooves may be unequal some of the grooves are arranged to serve as pressure dams to reduce parasitic leakage between the sleeve valve and bore wall. To this end the pressure dam grooves are connected by conduits to high-pressure grooves and poppet-type valves are mounted in the conduits to establish flow therethrough when their respective pressure dam grooves are serving as pressure dams and to block flow therethrough at other times.

3,600,894

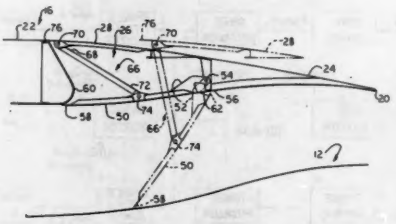
THRUST REVERSING APPARATUS

Charles R. McClain, Chula Vista, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed Apr. 28, 1970, Ser. No. 32,562

Int. Cl. F02k *3/02*

U.S. Cl. 60—226 **9 Claims**



Front fan jet engine has cowl surrounding engine and terminating in jet exhaust nozzle. Elongate shroud surrounds fan and engine to define annular duct for fan air terminating forward of exit end of nozzle. Shroud is divided near aft end into forward section and aft section spaced rearward to define annular outflow passage. Sleeve is stowed position overlies outer end of passage to block flow and deploys axially rearward to permit flow. Blocker doors pivoted at their aft ends to forward end of aft section close inner end of passage when stowed and swing to converge inwardly and contact cowl to block flow through aft section and divert it through passage. Ramps pivoted at their aft ends to intermediate point of doors and at their forward ends to forward end of sleeve act as links to move doors in response to movement of sleeve and deploy to diverge forwardly and redirect airstream with forward component to produce reverse thrust. Leading edge of sleeve forms annular end plate to increase forward flow component of exiting airstream.

3,600,895

MEANS FOR LOCATING A CYLINDRICAL PART IN AN AXIAL POSITION IN A HOLLOW CYLINDRICAL PART, MORE ESPECIALLY FOR A PROPELLANT CHARGE BODY AND A JET NOZZLE

Xaver Suter, Ruschlikon, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland

Filed Nov. 7, 1969, Ser. No. 874,844

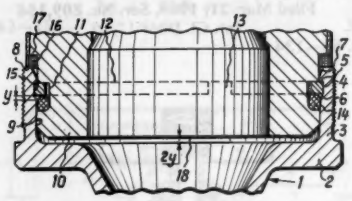
Claims priority, application Switzerland, Nov. 11, 1968, 16795/68

Int. Cl. F02k *9/04*

U.S. Cl. 60—255 **3 Claims**

Means for locating a cylindrical part in an axial position in a hollow cylindrical part such as a propellant charge body and a jet nozzle body. A split spring washer grips in a circular groove in the cylindrical part, and in a circular groove in the hollow cylindrical part. A conical groove wall is provided on one of the two circular grooves. The connection of the two parts can be released in one direction, and can be loaded and locked in the other direction. For releasing the connection of both parts in the direction of loading and locking the cylindrical part is arranged in the hollow cylindrical part with

radial play so that a relative tilting of both parts is impossible, and the spring washer upon gliding along on the conical



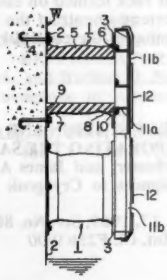
groove wall is deformed and in the direction of loading and locking projects over the circular groove which contains the conical groove wall.

3,600,896

MARINE FENDER ASSEMBLY

Tamotu Tateisi; Akihisa Mori; Takeo Takagi; Masanori Ogino, and Keinosuke Hara, all of Yokohama, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Oct. 27, 1969, Ser. No. 869,514
Claims priority, application Japan, Oct. 29, 1968, 78,323/68
Int. Cl. E02b *3/22*
U.S. Cl. 61—48 **9 Claims**



A marine fender assembly for protecting a wall from impact, including a frontal plate spaced from the wall and one or more fender bodies disposed between the frontal plate and the wall. The fender body is made of elastomer and comprises a hollow cylindrical portion and a pair of flanges which are integrally formed with the cylindrical portion at opposite ends thereof. One of the flanges of the fender body is secured to the wall in such manner that the axis of the fender body extends at right angles to the wall. The frontal plate is secured to the other one of the flanges of the fender body.

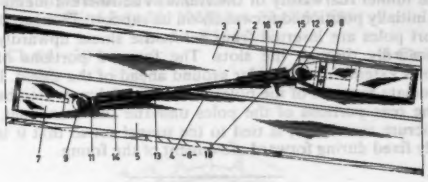
3,600,897

DEVICE FOR LAUNCHING A VESSEL

Jan Anthonie van der Werff, Slikkerveer, Netherlands, assignor to Verolme Machinefabriek Ijsselmonde N.V., Rotterdam, Netherlands

Filed Dec. 4, 1969, Ser. No. 881,969
Claims priority, application Netherlands, Dec. 4, 1968, 68-17397
Int. Cl. B63c *3/10*
U.S. Cl. 61—67 **8 Claims**

A plurality of elongated rods connecting a ship carrying slide frame to a chuteway. The rods are secured to the sides of the slide frame and chuteway through hinged turnbuckles, and at least one of the turnbuckles for each rod has a necked-down portion that houses an explosive charge. When the ship is to be launched all of the explosive charges are



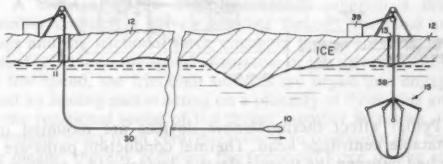
simultaneously detonated, thereby releasing the frame to slide down the chuteway into the water.

3,600,898

METHOD OF LAYING CABLE UNDER ICE

Edward C. Godfrey, Fern Park, Fla., and Robert A. Rubega, Rochester, N.Y., assignors to Marine Resources, Inc., Rochester, N.Y.

Filed Jan. 26, 1970, Ser. No. 5,677
Int. Cl. F161 *1/00*
U.S. Cl. 61—72.1 **4 Claims**



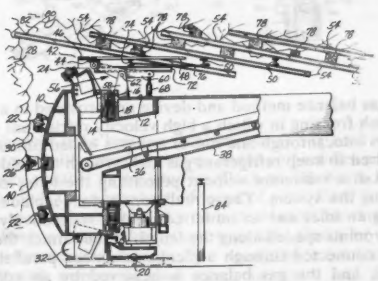
Cable is laid under ice by a self-propelled, submarine vehicle equipped with a reel of cable for paying out as the vehicle proceeds from a launching hole to a destination hole. A gyrocontrol system is set for the course from the launch hole to the destination hole and guides the vehicle on the first part of its travel, and an acoustic homing system is used to home the vehicle on a transmitter lowered into the water beneath the destination hole to complete the trip. The vehicle is retrieved by passing through large, collapsible loops arranged under the destination hole so that the loops, the threaded cable, and the vehicle can be drawn up through the destination hole.

3,600,899

SHIELD TUNNELING APPARATUS

Frank George Watson, 6 Tyne Court Mount Waverly, Victoria, and David Burnet Sugden, 33 Kingston Heights Kingston Beach, Tasmania, both of, Australia

Filed Mar. 24, 1970, Ser. No. 22,205
Claims priority, application Australia, Mar. 26, 1969, Mar. 5, 1970, 52612/69;0528/70
Int. Cl. E01g *3/03*
U.S. Cl. 61—85 **15 Claims**



An axially slotted roof shield is supported at its front end on a tunneling machine (or shield) frame. The frame in-

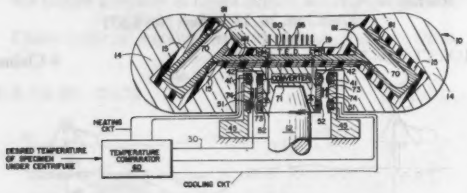
cludes a fulcrum support portion inset from said shield slots. One or more fulcrum members are movably supported on said support portion. A tunnel set or the like is anchored in the tunnel rearwardly of the frame. The fulcrum member(s) is initially positioned forwardly on its support. Elongated support poles are inserted from below the shield upwardly and forwardly through the slots. The forward portions of the poles extend into or under ground ahead of the shield. Intermediate portions of the poles rest on the fulcrum member(s). The rear portions of the poles underlie the tunnel set. The fulcrum member(s) is tied to the tunnel set so that it is axially fixed during forward movement of the frame.

3,600,900

TEMPERATURE CONTROLLED CENTRIFUGE

Charles Lee Buddecke, Fullerton, Calif., assignor to North American Rockwell Corporation

Filed Nov. 3, 1969, Ser. No. 873,286
Int. Cl. F25b *21/02*
U.S. Cl. 62—3 **11 Claims**



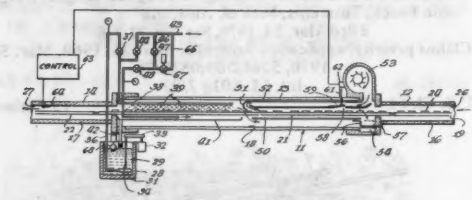
Peltier effect thermoelectric devices are mounted in a rotatable centrifuge head. Thermal conduction paths are attached between the thermoelectric devices and a position adjacent to the specimen being rotated in the centrifuge. A temperature-controlled device responds to the difference between a preselected temperature and the temperature of the specimen for maintaining the fluid at the preselected temperature.

3,600,901

GAS BALANCE CONTROL IN FLASH FREEZING SYSTEMS

Richard C. Wagner, Clarendon Hills, Ill., assignor to Integral Process Systems, Inc.

Filed Mar. 17, 1969, Ser. No. 807,491
Int. Cl. F25d *3/10*
U.S. Cl. 62—63 **9 Claims**



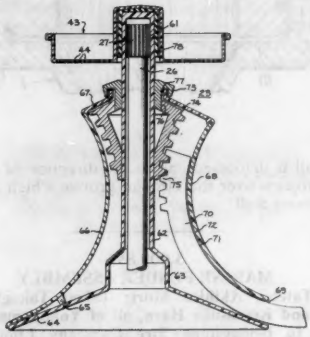
A gas balance method and device are provided in a system for flash freezing in which a high velocity refrigerant gas circulates into, through and out of an open ended tunnel and it is desired to keep refrigerant gas loss through the ends of the tunnel at a minimum without permitting the entry of warm air into the system. The circulation system includes a fan having an inlet and an outlet connected respectively to different points spaced along the length of the tunnel, the outlet being connected through a plenum chamber parallel to the tunnel; and the gas balance is achieved by an adjustable passage from the plenum chamber to the tunnel which permits a portion of the circulating refrigerant gas to short circuit its full circulation path.

3,600,902

ADJUSTABLE AGITATOR FOR FABRIC-CLEANING MACHINES

Thomas W. Williams, Valley Station, Ky., assignor to General Electric Company

Filed Mar. 21, 1969, Ser. No. 809,154
Int. Cl. D06f *17/10*
U.S. Cl. 68—134 **2 Claims**



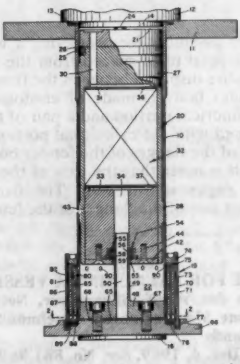
An agitator having variable area vanes is provided for an automatic clothes washer. A plurality of arcuate-shaped vanes are secured to the agitator centerpost for rotation and oscillation therewith, and housed within each of the vanes is an arcuate extendible vane element. A control knob is provided adjacent an upper portion of the agitator centerpost and depending from the control knob is a worm gear which cooperates with a gear rack formed on each of the vane elements to selectively extend or retract the vane elements according to the positioning of the control knob by the operator.

3,600,903

CRYOGENIC HEAT STATION AND APPARATUS INCORPORATING THE SAME

Fred F. Chellis, Manchester, and James A. O'Neil, Bedford, both of, Mass., assignors to Cryogenic Technology, Inc., Waltham, Mass.

Filed Mar. 17, 1969, Ser. No. 807,606
Int. Cl. F25b *9/00*
U.S. Cl. 62—6 **16 Claims**



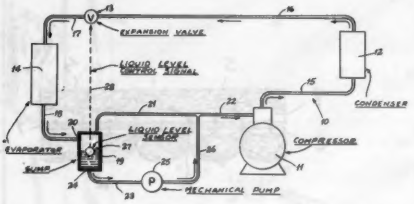
An improved heat station for cryogenic apparatus comprising one or more narrow fluid passages in heat exchange relationship with a portion of the external walls which enclose a refrigeration chamber of variable volume. The narrow fluid passages provide an extension of the fluid flow path of the apparatus which in turn provides an increase in heat transfer surface without any appreciable increase in void volume.

3,600,904

CONTROL FOR REFRIGERATION SYSTEM

Ralph B. Tilney, Saint Louis, Mo., assignor to Emerson Electric Co.

Filed May 27, 1969, Ser. No. 828,249
Int. Cl. F25b 41/00
U.S. Cl. 62—196 3 Claims



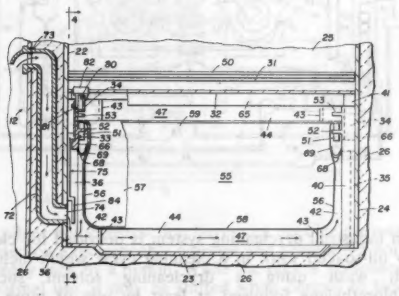
A control in a refrigeration system to control the rate of flow of refrigerant to the evaporator in response to variations in rate of flow of liquid refrigerant from the evaporator. A sump in the suction line between the evaporator and compressor for collecting liquid discharged with vapor from the evaporator. A pump for pumping liquid at a controlled rate from the sump for mixture with the vapor supplied from the upper end of the sump to the compressor. A liquid level sensor for sensing changes in the level of liquid within the sump and for controlling operation of an expansion valve on the inlet side of the evaporator in response to variations of liquid within the sump.

3,600,905

HIGH-HUMIDITY COMPARTMENT FOR REFRIGERATORS

Theodore F. Dymek, and Herbert D. Neudeck, both of Cedar Rapids, Iowa, assignors to Amana Refrigeration, Inc., Amana, Iowa

Filed Aug. 13, 1969, Ser. No. 849,846
Int. Cl. F25d 25/02
U.S. Cl. 62—382 6 Claims



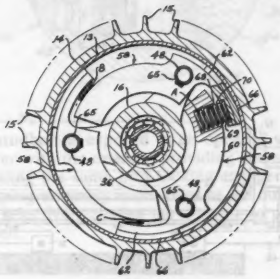
A high-humidity compartment, disposed in the bottom of the refrigerator compartment of a combination freezer-refrigerator, employs a drawer surrounded by a spaced sleeve. In order to permit the use of roller-type suspension so that the drawer can slide freely in and out, the sleeve is sealed against the side, back and front walls of the drawer. Into the space therebeneath cold air, whose flow is controlled by a damper, is ducted from the freezer compartment and bathes the bottom wall and the lower portions of the side and backwalls of the drawer, the air exiting from the sleeve to join the air from the refrigerator compartment returning to the freezer compartment.

3,600,906

CONSTANT SPEED DRIVE

Forrest O. E. Schultz, Owosso, Mich., assignor to Midland-Ross Corporation, Toledo, Ohio

Filed July 31, 1969, Ser. No. 846,506
Int. Cl. F16d 7/02
U.S. Cl. 64—30 5 Claims



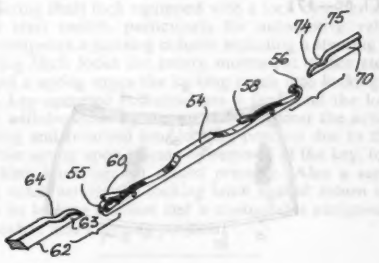
A constant speed drive mechanism wherein a drive member contacts a driven member through frictional surfaces and the frictional force engaging these two surfaces is varied relative to the speed of rotation of the driven member. At low speed, the frictional surfaces are urged into engagement by biasing means acting on a plurality of flyweights and, as the rotational speed of the driven member increases, the flyweights react from centrifugal force to overcome the biasing means, thereby reducing the frictional force on the surfaces.

3,600,907

KNITTING MACHINE HAVING MEANS TO TRANSFER KNITTED LOOPS

Jerry Miskovsky, Hicksville, N.Y., assignor to Marie Lanthier, Greenwood Lake, N.Y.; Richard Zimic; Emil Zimic and Raymond Lanthier, a part interest to each

Filed Nov. 12, 1969, Ser. No. 875,970
Int. Cl. D04b 7/04
U.S. Cl. 66—66 8 Claims



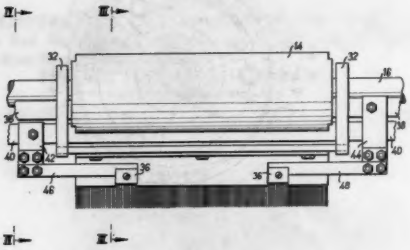
A links and links knitting machine has two spaced needle beds formed with parallel grooves. Jacks and needles are longitudinally slidable in the grooves. Each needle has hooks at opposite ends to engage knitted loops of yarn. Each jack has a latch-opening nose formed with a depression for removing and holding a knitted loop from a needle. Cams move the jacks and needles selectively. The needle beds are movable laterally with respect to each other, so that a jack in one groove in one bed, which has removed a loop from a needle in the bed, can be aligned with a needle in another groove in the other bed for transferring the loop to the other needle.

3,600,908

STRAIGHT-BAR KNITTING MACHINE PROVIDED WITH A LACE DRUM ATTACHMENT

Heinz Bliederhauser, Bortlingen, Germany, assignor to Gebruder Boehringer Gesellschaft Mit Beschrankter Haftung, Goppingen, Germany

Filed July 24, 1969, Ser. No. 844,386
Claims priority, application Germany, July 26, 1968, P 17 60 971.1
Int. Cl. D04b *15/04*
U.S. Cl. 66—96 5 Claims



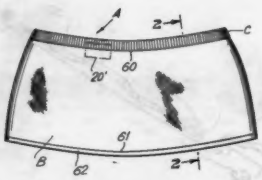
In a straight-bar knitting machine of the type having a plurality of sections for simultaneously knitting a plurality of pieces of goods each section includes a lace drum attachment and a pair of narrowing fingers. The lace drum attachment operates lace points for producing a pattern on the piece of goods. The narrowing fingers operate narrowing points for fashioning the pieces of goods and, for this purpose, are movable in the axial direction of the lace drum. According to the present invention a pair of narrowing fingers of each section are so guided that they may approach each other to a short distance without interference with the lace drum attachment. In event of an interference of the lace points with the narrowing points, an alarm is sounded and/or the machine is stopped.

3,600,909

FOOTLET CONSTRUCTION

Morris Kaplan, Allentown, Pa., assignor to Sondra Manufacturing Co., Inc.

Filed May 4, 1967, Ser. No. 636,094
Int. Cl. D04b *1/24*
U.S. Cl. 66—171 2 Claims



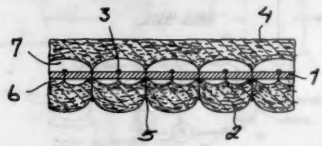
The disclosure describes a footlet construction which involves an integrally knitted upper band fitting around the top of the footlet or socklet which need not be assembled from gores and stitching. The socklet is made on a circular knitting machine by using a turned-over top knitted of Lycra yarn on top of a body of nylon yarn. The loops on the elastic top are provided by knitting 30 to 60 courses and preferably about 50 courses on 200 needles with the intervening or alternating needles holding the initial stitch so that a tubular element will be formed serving as the upper elastic band or selvage of the footlet.

3,600,910

FLUFFY TEXTILE WEB

Egon Jahn, Lengenfeld; Rolf Handel, Gera; Siegfried Ploch, Karl-Marx-Stadt, and Karl-Heinz Dietrich, Karl-Marx-Stadt, all of, Germany, assignors to VEB Halbmond Leppiche

Filed Dec. 16, 1969, Ser. No. 885,589
Int. Cl. D04b *23/10*
U.S. Cl. 112—438 5 Claims



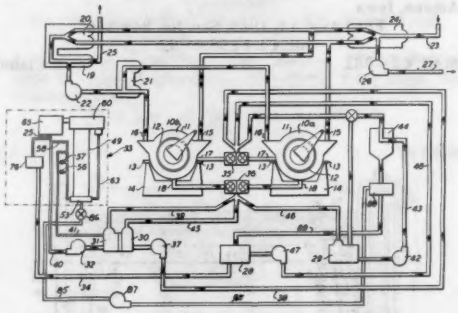
A base sheet, sandwiched between two piles of filaments, is anchored to one pile by drawing loops of filaments from that pile through the sheet and knotting or interlinking them directly at the sheet surface, loops of filaments from the other pile being drawn through the sheet and the first pile for knotting or interlinking along the surface of the latter pile.

3,600,911

INDUSTRIAL DRYCLEANING SYSTEM

Russell G. McLagan, Milford, Ohio, assignor to McGraw-Edison Company, Elgin, Ill.

Filed May 19, 1969, Ser. No. 825,607
Int. Cl. D06f *43/04, 43/08*
U.S. Cl. 68—18 C 3 Claims



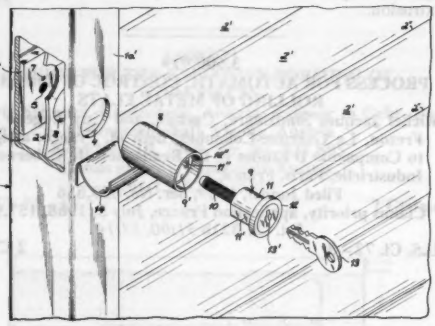
An industrial drycleaning system is provided for cleaning dirty oil-soaked work in a cleaning cycle which includes a batch wash using a drycleaning solvent such as perchlorethylene followed at least by one or more batch washes and/or a circulating wash through a filter. To conserve on the amount of solvent required succeeding washes are carried out using respectively cleaner solvents drawn from respective storage tanks of the system, and the solvents from these washes are stored for use in next preceding washes of a subsequent washing cycle. However, the initial batch wash, which removes the bulk of dirt and oil, leaves the solvent in such dirty condition it has to be distilled. A novel distillation apparatus of a tube type connected in the system has a capacity which enables the drycleaning solvent for the first batch to be distilled during the remainder of the cleaning cycle and, also, it has a facility for a continuing run through a whole day's operation without need for pumping off oil and residue.

3,600,912

SCREW-TYPE LOCK ASSEMBLY

Davis S. Foreman, 2737 Third Ave., Bronx, N.Y.

Filed Feb. 9, 1970, Ser. No. 9,498
Int. Cl. E05b *65/02;* E05c *19/18*
U.S. Cl. 70—77 10 Claims



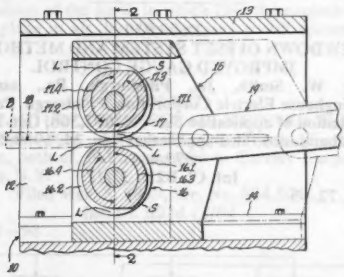
A screw-type lock assembly for sliding shutters where the shutter is guided between the flanges of a U-shaped channel, the shutter and one flange having axially aligned openings in the closed position of the shutter. A removable sleeve of the lock assembly is received in the aligned openings to prevent shifting of the shutter. A removable screw-type lock has a rod passing through the sleeve into engagement with the channel and locks against the sleeve.

3,600,913

PILGER MILL DIE ADJUSTMENT

Walter vom Dorp, Rheydt, Germany, assignor to Wean Industries, Inc., Youngstown, Ohio

Filed Sept. 2, 1969, Ser. No. 854,518
Claims priority, application Germany, Sept. 4, 1968, G 67 52 728.0
U.S. Cl. 72—220 10 Claims



A pilger mill construction having an annular die rotatably mounted on a reciprocable carriage and geared to a normally stationary rack by a pinion. While the rack is stationary during normal use, it may be shifted when desired to facilitate selective use of annular die portions which are spaced circumferentially of each other.

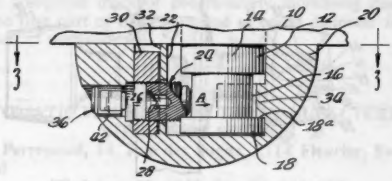
3,600,914

THEFT-PREVENTION DEVICE FOR TRACTOR-DRAWN TRAILERS

Marshall A. Johnson, Mundelein, and Herbert J. Kincaid, Libertyville, both of, Ill., assignors to The Illinois Lock Company

Filed Mar. 26, 1969, Ser. No. 810,460
Int. Cl. E05b *65/12;* B60r *25/00*
U.S. Cl. 70—232 1 Claim

A theft-prevention device for use with a tractor-trailer combination wherein the trailer has a downwardly extending pin on the bottom thereof adapted to fit an engaging plate on the tractor. The device includes a cover for the pin to prevent the tractor plate from engaging the pin. A threaded studbolt is disposed entirely within the cover with one end of the bolt selectively locking the cover onto the pin. The other



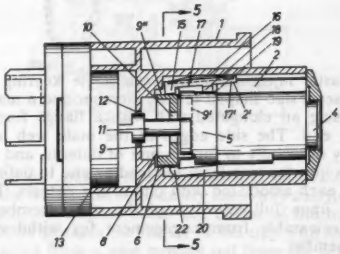
end of the studbolt is exposed in an opening which extends into the cover with the opening providing access to the studbolt for rotating the same into locking engagement with the pin. A lock plug assembly is disposed at the outer end of the opening for selectively closing the opening to prevent access to the studbolt.

3,600,915

STEERING SHAFT LOCK EQUIPPED WITH A LOCKING CYLINDER PARTICULARLY FOR AUTOMOTIVE VEHICLES

Gerhard Corboud, Hahnwald, Germany, assignor to Firma Josef Voss KG, Bruhl Bezirk Cologne, Germany

Filed Sept. 25, 1969, Ser. No. 861,014
Claims priority, application Germany, Sept. 28, 1968, Aug. 30, 1969, P 17 80 563.9;P 19 44 207.0
Int. Cl. B60r *25/02;* E05b *65/12*
U.S. Cl. 70—252 6 Claims



A steering shaft lock equipped with a lock cylinder and an ignition start switch, particularly for automotive vehicles, which comprises a steering column including a steering shaft. A locking latch locks the rotary movement of the steering shaft and a spring urges the locking catch into locking position. A key-operated eccentric has a shaft and the locking latch is withdrawable by the eccentric against the action of the spring and returned into locking position due to the effect of the spring upon release by removal of the key, to lock the locking latch against return pressure. Also a separate locking catch arrests the locking latch against return movement in its locking position and is controllable exclusively by the eccentric into a freeing position.

3,600,916

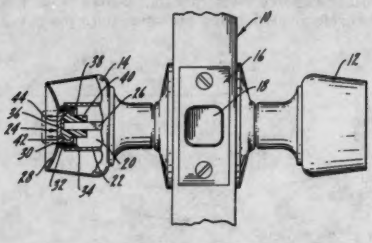
DOOR LOCK WITH PRISM DISPLAY

Albert L. Ruppert, Crystal Lake, Ill., assignor to Oak Electro/Netics Corp., Crystal Lake, Ill.

Filed May 4, 1970, Ser. No. 34,447
Int. Cl. E05b *17/00, 41/00*
U.S. Cl. 70—432 8 Claims

A doorknob assembly of the type wherein a button, generally centrally located in the handle, is effective to lock and unlock a lock mechanism. The button to lock and unlock the door moves within a passage, a portion of which may have a suitable indicia, for example a colored band, positioned on it. The button includes a prism with a reflecting surface, object surface and image surface. When the reflect-

ing surface is positioned adjacent the indicia in the passage, there will be a display visible at the outer transparent area of

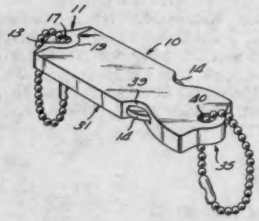


the button. Thus, the condition of the lock mechanism is readily apparent to one using the doorknob.

3,600,917
MOLDED KEYHOLDER

Albert W. Krock, Fremont, Ohio, assignor to The Scott & Fetzer Company

Filed Apr. 8, 1969, Ser. No. 814,280
Int. Cl. A47g *29/10*
U.S. Cl. 70—459 **1 Claim**

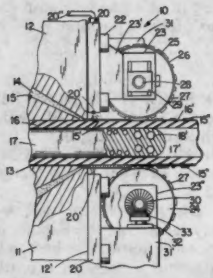


A plastic injection-molded releasable keyring connector comprises a slab-shaped female member and a male member comprising an elongated web with a flange formed at the trailing end. The side edges of the male web are stepped laterally outwardly to form a pair of detents, and a deep slot extends into the web from the leading end to define a pair of fingers each associated with one of the detents. The detents engage upon full insertion of the male member, and are finger releasable from engagement for withdrawal of the male member.

3,600,918
EXTRUSION APPARATUS AND METHOD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J.

Continuation-in-part of Ser. No. 373,482, June 8, 1964, Pat. No. 3,387,330, and a continuation-in-part of 142,405, Oct. 2, 1961, and a continuation-in-part of 691,622, Oct. 2, 1957, now Pat. No. 3,002,615. This application June 5, 1968, Ser. No. 734,686
Int. Cl. B21b *37/14*; B21c *23/00*; B28b *21/54*
U.S. Cl. 72—7 **13 Claims**



An extrusion apparatus is provided which includes auxiliary means cooperating with the extruder in forming material to shape. In one form, the auxiliary means employs vibrational means for facilitating extrusion and improving the extruded article.

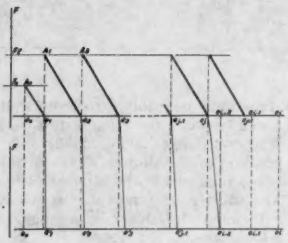
In another form, the auxiliary means includes a mandrel and means for predeterminately varying the shape of an extrusion formed on the mandrel.

The invention is also drawn to methods for extruding articles of composite materials and improvements in the art of extrusion.

3,600,919
PROCESS FOR AUTOMATIC CONTROL OF THE HOT ROLLING OF METAL FLATS

Michel Jacques Sindzingre, Cachan, and Guy Eugene Rene Frezon, La Garenne-Colombes, both of, France, assignors to Compagnie D'Etudes et De Realisation De Cybernetique Industrielle, Paris, France

Filed June 3, 1969, Ser. No. 829,856
Claims priority, application France, July 5, 1968, 157,998
Int. Cl. B21b *31/00, 37/14*
U.S. Cl. 72—8 **2 Claims**

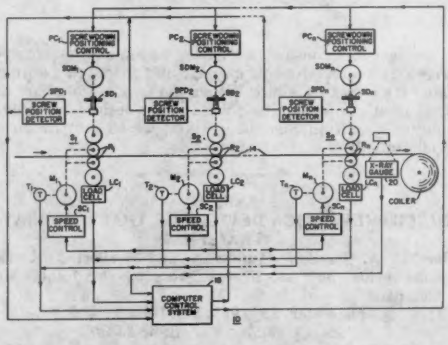


A process for automatic control of the rolling of metal flats by determination of consecutive roll nips, uses a program in the form of a sequence of intermediate thicknesses for the product devised on the basis of numerical determination of a parameter denoting the plasticity of the metal. The development of such parameter depends on product thickness and a selected rolling force. The invention finds particular, but not exclusive, application in the hot rolling of metal flats.

3,600,920
SCREWDOWN OFFSET SYSTEM AND METHOD FOR IMPROVED GAUGE CONTROL

Andrew W. Smith, Jr., Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of application Ser. No. 677,308, Oct. 23, 1967, now abandoned. This application Nov. 24, 1969, Ser. No. 872,461
Int. Cl. B21b *37/12*
U.S. Cl. 72—8 **15 Claims**



A screwdown recalibration system is provided for use in a computer-controlled rolling mill. The computer uses the dif-

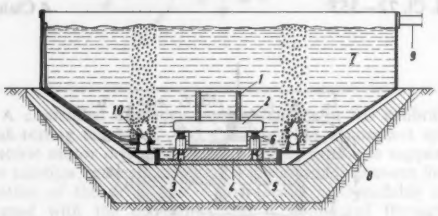
ference between gauge directly calculated by mass flow concepts and gauge calculated from a measured screwdown unloaded roll opening and roll force at each stand to recalibrate the screwdowns for that stand. The system is adaptable to either providing information to an automatic roll force gauge control system according to a predetermined schedule or to function as an online recalibration scheme which is an integral part of a more comprehensive roll force gauge control system.

3,600,921

DEVICE FOR THE EXPLOSIVE FORMING OF WORKPIECES

Ludwig Schwarz, Kapfenberg, Austria, assignor to Gebr. Bohler & Co. Aktiengesellschaft, Vienna, Austria

Filed May 19, 1969, Ser. No. 825,895
Claims priority, application Austria,
Int. Cl. B21d *26/08*
U.S. Cl. 72—56 7 Claims



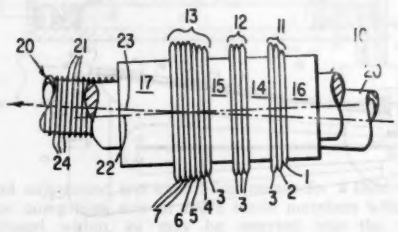
A device for explosive forming of workpieces through a fluid comprising a vessel containing liquid (water), a bottom plate, and an anvil spaced from the bottom plate by biasing means (springs). The workpiece is positioned on top of the anvil. Guide means are provided which are operable with the anvil so that when the explosive-forming force strikes the anvil it moves linearly downwardly, and the liquid between the anvil and the bottom plate progressively damps the downward movement as it laterally escapes. The guide means may be a series of pistons and cylinders, and preferably the explosive forming is done completely under water and a wall of bubbles is produced adjacent the anvil. It is possible that the level of water is only equal to the level of the upwardly biased position of the anvil, in which case the explosive forming takes place in air, but the damping is still accomplished by water.

3,600,922

MANUFACTURE OF INTEGRALLY FINNED TUBING

Carl J. Schmeling, Liverpool, and Frank F. Walters, Syracuse, both of, N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 5, 1969, Ser. No. 804,561
Int. Cl. B21d *13/04*
U.S. Cl. 72—98 Claims



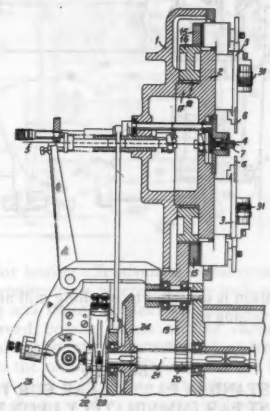
Apparatus for finning tubes comprising three arbors provided with a multiplicity of finning discs and skewed relative to a reference line representing the path of travel of a tube so that a continuous integral helical fin is produced on a length of tubing. The discs are separated into three groups, the groups being separated axially by cylindrical spacers. The first group comprises discs of progressively increasing diameter. The second group comprises discs of equal diameters; the size thereof being equal to the size of the diameter of the last disc of the first group and the size of the diameter of the first disc of the last group. The last group of discs on each arbor comprises discs of progressively increasing diameter for the first part of the group and of equal diameter for the last part of the group.

3,600,923

AUTOMATIC MACHINE FOR THE MANUFACTURE OF STEEL WIRE SPRINGS

Rene Perrenoud, 14, Rue des Sugits, 2114 Fleurier, Switzerland

Filed Apr. 23, 1969, Ser. No. 818,685
Claims priority, application Switzerland, Aug. 13, 1968, 012165/68
Int. Cl. B21f *11/00*; B21j *7/20*; B21f *3/00*
U.S. Cl. 72—129 4 Claims



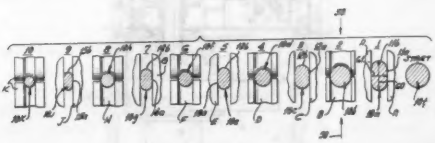
A machine for making steel wire springs particularly intended for the watch-making industry has a tray carrying fanwise-arranged tool holders about the center of the tray and radially slidable towards the center of the tray with tools for shaping a spring from a wire coming out from the center of the tray. A means for actuating the tool holder include a gear mounted parallel to the tray and meshing with pinions distributed about the gear, each of these pinions being secured on a shaft carrying a cam controlling the advance of the tool holder, which is spring urged rearwardly.

3,600,924

METHOD OF ROLLING TITANIUM AND OTHER RODS

Denzil O. Martin, c/o Rancho Del Rey, Sp. 83, 16222 Monterey Lane, Huntington Beach, Calif.

Filed Mar. 28, 1969, Ser. No. 811,301
Int. Cl. B21b *13/08*
U.S. Cl. 72—234 14 Claims



Titanium and similar rods reduced in diameter by heating to a required temperature and then continuously passing a rod through roll stands to progressively reduce its area without intervening reheating being necessary. The roll stands change the shape of the rod alternately between a

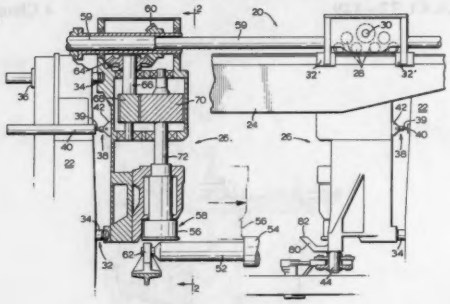
round shape and a flat shape, a pair of opposed flat sides of each flat configuration merging smoothly into a pair of opposed rounded sides of relatively large radius of curvature, thereby avoiding the formation of sharp corners as a result of each flattening operation.

3,600,925

EDGER FOR STEEL MILL

Michael Frank Field, Dollard des Ormeaux, Quebec, and John Frederick Barry Wood, Montreal, Quebec, both of, Canada, assignors to Dominion Engineering Work Limited, Montreal, Canada

Filed May 7, 1969, Ser. No. 822,564
Claims priority, application Canada, May 21, 1968, 020,424
Int. Cl. B21b *31/00*
U.S. Cl. 72—237 **10 Claims**



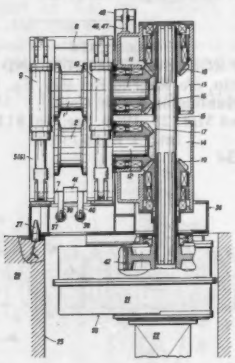
This invention is directed to a rolling mill and in particular to a vertical edging mill.

3,600,926

ROLLING STAND IN PARTICULAR FOR THE SHAPING OF A CAST BAR IMMEDIATELY UPON LEAVING A CONTINUOUS-CASTING PLANT

Ernst Hinterholzl, Linz, Austria, assignor to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft, Linz, Austria

Filed July 24, 1969, Ser. No. 844,410
Claims priority, application Austria, Apr. 23, 1969, A 3910/69
Int. Cl. B21b *35/00*
U.S. Cl. 72—249 **7 Claims**



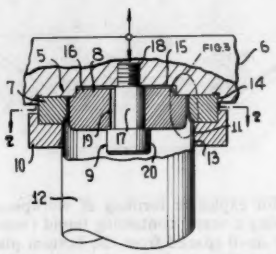
A rolling stand, particularly destined for shaping a cast bar immediately upon leaving a continuous-casting plant, is described, comprising two upright roll standards having their bottom ends connected by a rigid cross connection and their top ends connected by a detachable cap connection to form a cage, a pair of insert-mounted horizontal rolls arranged to be vertically displaceable along said standards, and a baseplate on which said rolling stand is detachably mounted. According to the invention, a transmission gear enclosed in a casing is detachably suspended on each roll shaft, said gears cooperating with and displaceable along a common vertical driving shaft connected for rotation with a drive arranged below floor; on separation from the baseplate, said rolling stand together with the suspended transmission gears and the driving shaft is vertically liftable and lowerable as a coherent, replaceable unit to move the driving shaft out of and into engagement with said drive.

3,600,927

NECKING DIE WITH FLOATING CENTER POST

Richard O. Wahler, Rolling Meadows, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Dec. 30, 1968, Ser. No. 787,976
Int. Cl. B21d *19/00*
U.S. Cl. 72—353 **4 Claims**



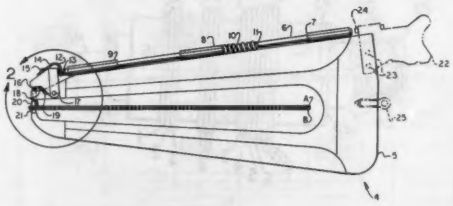
This disclosure relates to a die assembly for changing the diameter of end portions of cylindrical members having at least one circumferential wall portion of an increased effective thickness. Basically the die assembly is formed of a ring member and a post member with one of the members being floatingly mounted relative to the other member to permit the members to position themselves in accordance with the circumferential position of the wall portion of an increased effective thickness, thereby providing for a tightening up of die clearances which permits keeping the metal of the member being reshaped under better control and eliminating wrinkles. The die assembly is particularly adapted for necking down end portions of can bodies having lap seams.

3,600,928

TOGGLE TIP EXTENSION RIVET SQUEEZER: YOKE

Norman W. Retherford, Riverside, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed Dec. 26, 1968, Ser. No. 787,056
Int. Cl. B21j *15/16*
U.S. Cl. 72—416 **4 Claims**



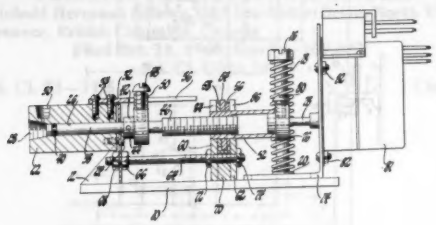
Apparatus for riveting two surfaces together at rivet locations inaccessible to conventional rivet guns includes an air pressure driven elongated guided rod which actuates a bellcrank block operated squeezer adapter for squeezing the rivet.

3,600,929

CONSTANT FLOW LEAK SIMULATOR

Francis J. Markey, Lewisburg, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 1, 1969, Ser. No. 862,811
Int. Cl. G01m *3/02, 19/00*
U.S. Cl. 73—1 R 1 Claim



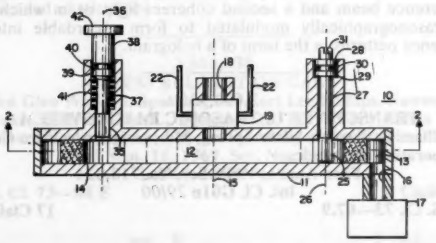
A controlled displacement leak simulator for calibrating leak-testing machines. The simulator has a constant speed electric motor driving a rotating drive nut that is supported for rotation between a pair of brackets which prevent linear motion of the drive nut. A drivescrew is threadably connected with the drive nut and is connected through a coupling to a guide member and a piston. The guide member prevents rotation of the drivescrew but permits linear motion thereof. the piston is slidably disposed in a flow chamber such that linear motion of the piston and drivescrew cause fluid to flow from the chamber or permit fluid to flow into the chamber at a controlled rate. A flow port in the chamber is adapted to be connected with the leak test machine which is to be calibrated.

3,600,930

BUILT IN TESTING EQUIPMENT FOR FLUID VORTEX DEVICE

Walter M. Posingies, Edina, Minn., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Oct. 13, 1969, Ser. No. 865,678
Int. Cl. G01p *21/00*
U.S. Cl. 73—1 D 6 Claims



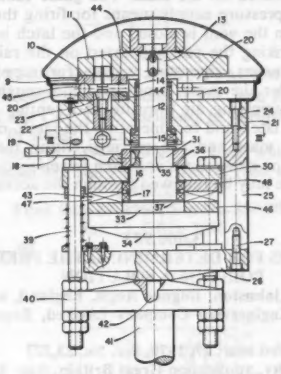
Null adjustment and calibration means for a fluid vortex device comprising one or more blade members which are positioned within, or may be inserted into the vortex chamber of the device remote from its central axis. For null adjustment purposes, a blade is permanently positioned within the chamber at such an angle as will provide rotational flow sufficient to compensate for existing null offset. For calibration purposes, a blade is temporarily positioned within the chamber at the angle required to simulate a predetermined input signal.

3,600,931

APPARATUS FOR TESTING LUBRICANTS WITH REGARD TO ROLLING BORE FRICTION ON BEARING BALLS

Anton Albert Bartel, Grafelfing, and Horst Geissen, Munich, both of, Germany, assignors to Dow Corning Corporation, Midland, Mich.

Filed Oct. 29, 1969, Ser. No. 872,082
Claims priority, application Germany, Mar. 10, 1967, P 19 12 100.7
Int. Cl. G01n *3/56, 33/30*
U.S. Cl. 73—10 6 Claims



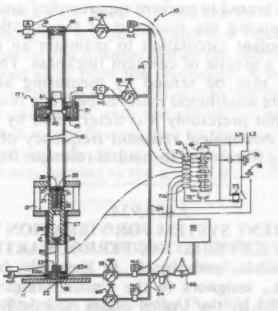
Apparatus for testing effectiveness of lubricants in rolling bore friction applications where bearing balls are subjected to both rolling and sliding contact with races. One of a pair of spaced curved bearing races of like radius are made reciprocably pivotable about an axis distant from the races with respect to the other race. This causes the ball between the races to shift with both rolling and sliding motion. Results are observed in the form of wear on the ball and races.

3,600,932

PNEUMATIC SHOCK TESTING MACHINE

Gilbert F. Hill, Skaneateles; Frederick J. Loetterle, Marietta; Farris Smith, Skaneateles, and Stanley Gray, Skaneateles, all of, N.Y., assignors to Mechanical Technology Incorporated, Latham, N.Y.

Filed Dec. 9, 1969, Ser. No. 883,427
Int. Cl. G01n *3/08*
U.S. Cl. 73—12 4 Claims



The machine has a baseplate, a vertically extending cylinder thereon supporting a loading stage with access door and a vertically extending guide tube secured thereon aligned with the cylinder. A tubular seismic mass is slidable upward by means of air pressure in the cylinder and as a tubular stop

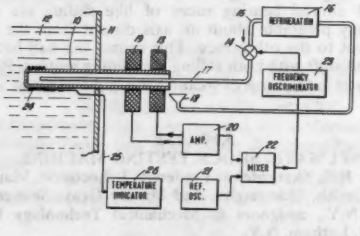
therewithin, secured at its lower end in the lower portion of the cylinder. The stop has its upper end in sealed engagement with the passage through the mass, the stop tube being adapted to supply air to the mass passage above the seal. An annular anvil, guided in and supported by the mass, and carrying an annular shock pad thereon, is capable of movement upward beyond the mass when pressure is supplied through the stop tube, the pad then making sealed contact with the lower end of the guide tube, the passage through anvil and pad being capable of delivering air under a cylindrical specimen-carrying carriage carried on the pad for forcing the carriage upward in the guide tube. Latch means secured on the guide tube is operable to detain the carriage in raised position when air from the stop tube is shut off and the anvil and pad are lowered on the mass. The guide tube has vent means and air pressure supply means for firing the carriage downward when the vent is closed and the latch is released, the carriage striking the pad supported on the raised mass. Programming means, operating valves for supplying and venting air under the mass, supplying air through the stop tube, and for supplying air pressure and venting the guide tube above the latch and for operating the latch, may be set for raising the mass and the carriage, firing the carriage downward one or more times and then lowering the mass so that the carriage may be removed through the access door.

3,600,933

APPARATUS FOR DETERMINING THE FREEZING POINT OF A SOLUTION

James Stewart Johnston, Bognor Regis, England, assignor to Rosemount Engineering Company Limited, Bognor Regis, England

Filed Mar. 27, 1970, Ser. No. 23,377
Claims priority, application Great Britain, Apr. 1, 1969, 17106/69
Int. Cl. G01n *25/02*
U.S. Cl. 73—17 R **19 Claims**



Apparatus for determination of the freezing point of a liquid or solution has a probe extending into the liquid which is cooled by a coolant circulated in the probe and with a resistance-type temperature sensor to sense the temperature of the mantle of solid forming on the probe. The probe is mechanically vibrated to prevent supercooling and means are provided for sensing the thickness of the mantle and controlling the coolant circulation to maintain an equilibrium condition with a mantle of constant thickness. The thickness of the mantle may be sensed by measuring an electrical parameter of the solid/liquid material between two electrodes on the probe but preferably it is determined by sensing the change in the mechanical resonant frequency of the probe, the probe being vibrated at its natural resonant frequency.

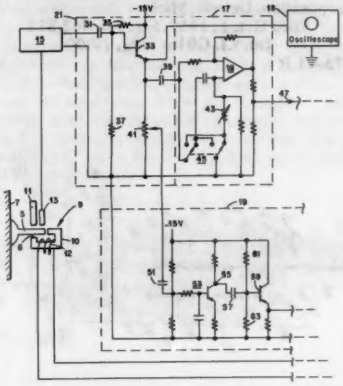
3,600,934

EDDY CURRENT SYSTEM FOR VIBRATION TESTING OF CANTILEVERED NONFERROUS ARTICLES

Donald E. Hendrix, and Harold A. Kermicle, both of Oak Ridge, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Dec. 23, 1969, Ser. No. 887,695
Int. Cl. G01n *24/00*
U.S. Cl. 73—67.2 **4 Claims**

An eddy current-induced vibration testing device has been provided which maintains self-excited resonant frequency vibrations in cantilevered articles such as compressor blades. The device automatically controls the amplitude of vibration of the blade and is capable of controlling the amplitude



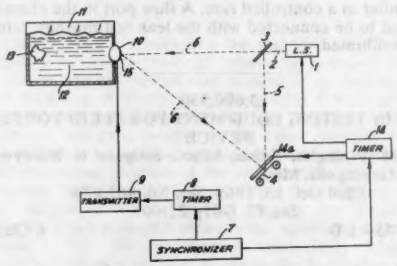
within a wide range for nondestructive testing and is further capable of driving the blade to destruction by fatigue.

3,600,935

METHODS AND APPARATUS FOR PRODUCING A HOLOGRAPHIC LIGHT PATTERN FROM AN ULTRASONIC IMPULSE

Gilbert Baum, 152 Brite Ave., Scarsdale, N.Y.

Filed Aug. 16, 1968, Ser. No. 753,111
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.5 H **33 Claims**



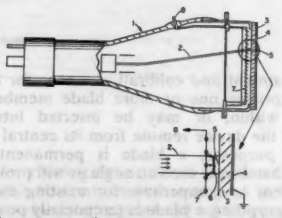
A method and apparatus employing an ultrasonic signal to cause an interference pattern between a coherent light reference beam and a second coherent light beam which is ultrasonographically modulated to form recordable interference patterns in the form of a hologram.

3,600,936

TRANSCEIVER ULTRASONIC IMAGE SYSTEM

William R. Turner, Silver Spring, Md., assignor to Vitro Corporation of America

Filed Apr. 1, 1968, Ser. No. 718,024
Int. Cl. G01n *29/00*
U.S. Cl. 73—67.9 **17 Claims**



A high conductance cathode-ray tube for ultrasonic applications employing a continuous piezoelectric conversion face

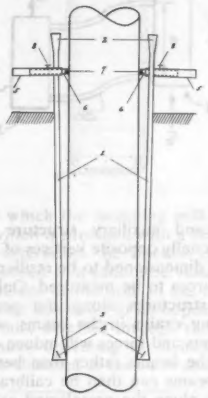
plate capable of generating ultrasonic signals when swept by a cathode-ray beam, as well as accepting reflected ultrasonic echo signals which modulate the cathode-ray beam to obtain electronic manifestations of the received signals, and method of using same. A two-gun tube modification, one gun utilized for signal emission and the other for signal reception, in conjunction with a common piezoelectric plate, is also disclosed.

3,600,937

PROBES FOR TESTING BUTT END OF POLES

Reinhold Hermann Nilberg, 463 Beachview Drive, North Vancouver, British Columbia, Canada

Filed Oct. 21, 1968, Ser. No. 769,447
Int. Cl. G01n *24/04*
U.S. Cl. 73—71.5 **1 Claim**



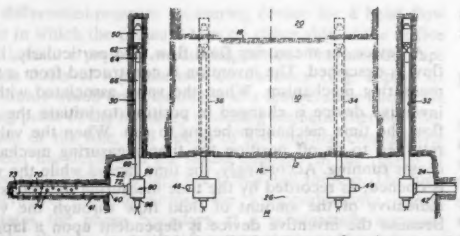
This improvement relates to a pair of spike-type ultrasonic probes for testing the soundness of utility poles at any depth below the ground, by the diametral sound transmission method which correlates the increase in signal travel time, around a rot pocket, to the degree of decay. One probe is the sound-transmitting probe and the other probe, on the opposite side of the butt, is the receiving probe. Each probe comprises a conical head used for hammering the probe into the soil, with a lead hammer, closely along the butt, and for mounting of a transducer, a shaft attached at the upper end to the head, a wedge-type blade attached to the lower end of the shaft. The wedge-type blade is designed to push aside the soil along the butt during hammering and also to make pressure contact for sonic coupling of the probe at the desired point of the butt, when the probe is turned into test position by means of a hand-operated lever or handle mounted at the upper end of the probe.

3,600,938

STRESS RELAXATION GAGE

Galen Glen Waddell, Spokane, and Earl Lee Phillips, Newman Lake, both of, Wash., assignors to The United States of America as represented by the Secretary of the Interior

Filed Sept. 16, 1969, Ser. No. 858,427
Int. Cl. G01b *7/18*
U.S. Cl. 73—88 E **8 Claims**



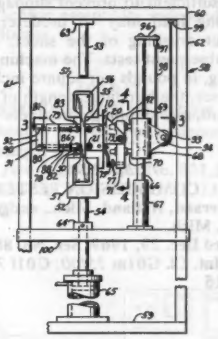
Contemporaneously with the displacement of underground medium to form an excavation, measurements of deformation in the medium surrounding the excavation are taken by an arrangement of probe sensors in boreholes drilled in this surrounding medium. Ends of the sensors projecting from the boreholes are referenced to mount structures fixed to a stable substance, such as a distance extension of the surrounding medium, and the opposite sensor ends inside the boreholes are flexibly joined to anchors embedded at the deep ends of the boreholes. Strain gages affixed to cantilevers connected between probe structures and the flexible joints produce signals when shifting of the medium moves the anchors therein with respect to the referenced probe structures. These signals are interpreted as data on deformation during excavation, and subsequently time-dependent deformation.

3,600,939

EXTENSOMETER AND ATTACHMENT

Robert D. Steele, Shingle Springs, Calif., and Richard J. Farris, Salt Lake City, Utah, assignors to Aerojet General Corporation, El Monte, Calif.

Division of Ser. No. 749,233, May 29, 1968, which is a division of application Ser. No. 592,018, Nov. 4, 1966, now Pat. No. 3,416,233.
Filed Aug. 18, 1969, Ser. No. 850,704
Int. Cl. G01n *3/06*
U.S. Cl. 73—95 **4 Claims**



A means for mounting an extensometer on a tension producing mechanism. The extensometer being a pair of spaced friction wheels mounted on parallel axes, adapted to engage the side of a test specimen held at its opposite ends by gripping jaws movable apart from each other. The mounting means being a rod mounted parallel to the specimen and attached to one of the jaws. The rod carries a sleeve slidably lengthwise along the rod and the sleeve is freely rotatable or the rod. A bar means is supported by the sleeve and is mova ble toward and away from the specimens. A weight supporting means is anchored to the rod and to the other jaw and is in operable association with the sleeve for maintaining the friction wheels in position relative to the specimen. The extensometer is capable of being pivoted relative to the bar means on an axis parallel to the axes of the friction wheels.

3,600,940

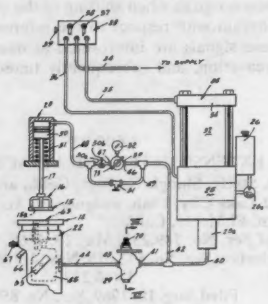
AUTOMATIC BURST TESTER

Fred Schlegel, Wheeling, Ill., assignor to E. J. Cady and Company, Chicago, Ill.

Filed June 9, 1969, Ser. No. 831,396
Int. Cl. G01n *3/26*
U.S. Cl. 73—102 **10 Claims**

A sheet material burst testing machine which automatically clamps the sheet to be tested between two apertured members under a controlled hydraulic load sufficient to prevent slippage without crushing the sheet, and which then automatically exerts a constantly increasing hydraulic pressure

against the exposed clamped sheet area in the apertures of the members until the sheet bursts, whereupon the pressure drops. A guage actuated by the increasing pressure stops at the maximum developed pressure and indicates the burst resistance of the sheet material. The machine has a pneumatically operated positive displacement ram servomotor or hydraulic booster which forces the flow of hydraulic liquid in a closed system to first actuate a clamping device and to then expand a rubber diaphragm against the sheet clamped by the

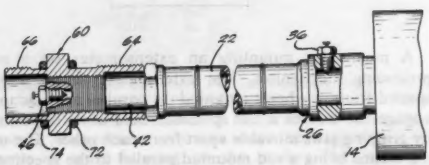


plates until the sheet bursts. The clamping load is automatically proportionally higher than the load on the diaphragm by an amount sufficient to prevent slippage, or alternately a desired clamping load may be predetermined to prevent slipping without crushing of the sheet, and automatically reapplied on subsequent tests. The machine is especially useful in measuring, in pounds per square inch or kilograms per square centimeter, the bursting strength of paper, fiberboard, corrugated board, and shipping containers made therefrom.

3,600,941
COMPRESSION TESTER

John H. Kammeraad, Holland, Mich., assignor to K-Line Tool Co., Holland, Mich.

Filed Dec. 29, 1969, Ser. No. 888,234
Int. Cl. G01m *15/00*; G01l *7/00*
U.S. Cl. 73—115 **11 Claims**



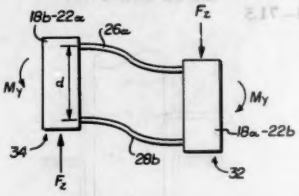
An improved compression tester and novel fittings therefor, the hose of the tester being provided with a nipple concentrically threaded both internally and externally, the internal threads engaging a check valve independent of the mounting of the fittings on the external threads. The two fittings are reversible, both ends of at least one of the fittings being externally threaded for a distance along the length of the fitting, the distance differing for the two ends. The internal threading by which both fittings threadably engage the nipple of the base is along the center portion only of the bore.

3,600,942
LOAD CELL

Albert E. Brendel, Lake Orion, Mich., assignor to Lebow Associates, Inc., Troy, Mich.

Filed Feb. 4, 1970, Ser. No. 8,668
Int. Cl. G01l *5/12*
U.S. Cl. 73—141 **9 Claims**

A load cell for isolating and measuring forces along a single preselected axis comprises a pair of identical beam systems, each beam system consisting of four coplanar beams arranged as the sides of a square, and the plane of each system being oriented perpendicularly to the preselected axis. The two beam systems are spaced from each other along the preselected axis and oriented so that the beams of one system are aligned with respective beams of the other system. The only interconnection between the two beam systems consists of two unconnected substantially rigid auxiliary structures, one of which interconnects the diagonally opposite vertices of one beam system with each other and with the corresponding vertices of the other beam system,



while the second auxiliary structure interconnects the remaining diagonally opposite vertices of both beam systems. The beams are dimensioned to be resiliently yieldable within the range of forces to be measured. Only forces applied to the auxiliary structures along the preselected axis will produce bending strains in the beams, while all extraneous external moments and forces will induce compressive or tensile strains in the beams rather than bending forces. Strain gages on the beams can then be calibrated to measure the unknown force along the preselected axis in terms of such bending strains.

3,600,943
FLOW MEASURING DEVICE

Louis L. Blanchard, Toledo, Ohio, assignor to William C. Blanchard, a part interest

Filed July 24, 1969, Ser. No. 844,562
Int. Cl. G01f *1/02*
U.S. Cl. 73—194 **12 Claims**

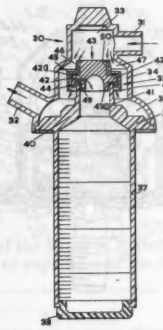
A device for measuring fluid flow, and particularly, liquid flow is described. The invention is constructed from a time-measuring mechanism. When the valve associated with the inventive device is changed in position to initiate the fluid flow the time mechanism begins to run. When the valve is returned to its off position the time measuring mechanism ceases running. Accordingly, the time lapsed while the valve is opened, as recorded by the time measuring mechanism, is indicative of the amount of fluid flow through the valve. Because the inventive device is dependent upon a lapse of time during which fluid flows the device must be calibrated for the particular system in which it is employed.

3,600,944

MILK METERS

William David John Hutchings, Alston Farm, Slapton, Kingsbridge, Devon, England

Filed Nov. 8, 1968, Ser. No. 774,255
Int. Cl. G01f 1/00
U.S. Cl. 73—203 7 Claims



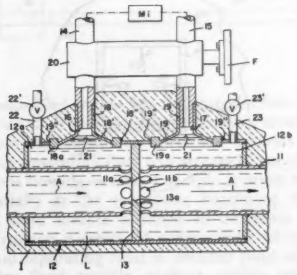
A milk meter in which the incoming milk passes through two channels and which is provided with a floating choke the position of which determines the fraction of milk diverted from one of the channels to a calibrated vessel. The choke is sensitive to the pressure of the milk in the channel through which part of the milk flows and to an opposed pressure due to the part of the milk diverted through the other channel, the opposed pressures operating to maintain substantially constant the fraction directed to the calibrated vessel.

3,600,945

PRESSURE-MEASURING SYSTEM

Heribert Wenzel, and Klaus van Rinsum, both of Munich, Germany, assignors to Linde Aktiengesellschaft, Wiesbanden, Germany

Filed May 1, 1969, Ser. No. 821,559
Claims priority, application Germany, May 2, 1968, P 17 73 337.8
Int. Cl. G01f 1/00
U.S. Cl. 73—205 10 Claims



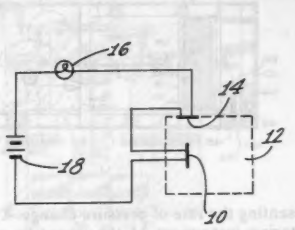
A differential-pressure measuring device for a head flow meter in which the pressure taps on either side of the orifice plate lead to a pressure-measuring device. The pressure taps include ducts of high thermal conductivity (e.g. copper or aluminum) which are maintained at a temperature above the boiling point of the liquid by a heating element, thermal conduction or the like, and inserts of low thermal conductivity between the ducts and the liquid chamber in the region of the point at which the taps are connected thereto. The high temperature gradient across the low-conductivity inserts maintains the phase boundary at a substantially constant position therein in spite of temperature and/or pressure variations in the chamber.

3,600,946

LIQUID LEVEL SENSOR

Francis P. Ziemba, Granada Hills; John R. Moross, Whittier, and Henry S. Katzenstein, Pacific Palisades, all of, Calif., assignors to Solid State Radiations, Inc., Los Angeles, Calif.

Filed July 10, 1969, Ser. No. 840,747
Int. Cl. G01f 23/00
U.S. Cl. 73—295 10 Claims



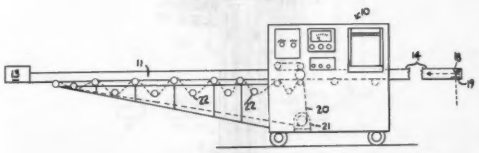
An improved liquid level sensor is provided which includes a first semiconductor element exhibiting particular resistance/temperature characteristics so as to have a first resistance value when the element is submerged in a liquid and a second resistance value when the liquid level drops to expose the element to the ambient temperature, and which includes a second element in series with the first element and exhibiting a positive resistance/temperature characteristic so as to render the sensor essentially independent of ambient temperature conditions.

3,600,947

TEMPERATURE SCANNER

Aloysius W. Farabaugh, Verona, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed June 9, 1969, Ser. No. 831,386
Int. Cl. G01j 5/04; G01k 1/12, 13/04
U.S. Cl. 73—343 R 2 Claims



A temperature scanner with an extensible boom is mounted upon a mobile carriage for extending the scanner over a hot glass ribbon; a rotatable mirror is mounted near the end of the boom for conveying radiation from the glass surface to a temperature-recording device aside from the glass ribbon.

3,600,948

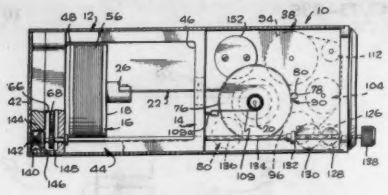
FLUID PRESSURE-ACTUATED TRANSDUCER AND AIRCRAFT ALTITUDE MONITORING INSTRUMENT EMBODYING SAME

Carl T. Luce, 23259 Collins St., Woodland Hills, Calif.

Filed Mar. 13, 1970, Ser. No. 19,358
Int. Cl. G01l 7/12
U.S. Cl. 73—386 20 Claims

A fluid pressure-actuated transducer and an aircraft altitude monitoring instrument embodying the transducer. The transducer has a fluid pressure sensor, such as a bellows, having a pressure wall which is urged in one direction by the fluid pressure force being monitored and in the opposite direction by a shaped spring force, such that the pressure wall is positioned according to a predetermined function of monitored pressure. An output shaft is drivably coupled to the pressure wall for rotation through an angle proportional

to the displacement of the pressure wall resulting from a change in the monitored pressure. The shaft may drive a readout mechanism for providing a visual, mechanical, or electrical readout representing the pressure force, and a tachometer generator for generating an electrical voltage



representing the rate of pressure change. The aircraft altitude monitoring instrument of the invention employs the transducer to provide a linear readout representing altitude and vertical speed, an altitude alert signal, an input signal to an autopilot or altitude transponder, or the like, and to perform other control functions.

3,600,949

PRESSURE GAUGE

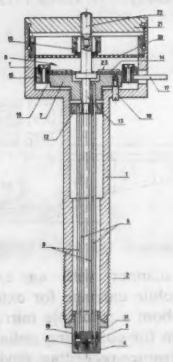
Hermann R. K. N. Janeschitz-Kriegel, Delft, and Johannes Schijf, The Hague, both of, Netherlands, assignors to Nederlandse Organisatie Voor Toegepast-Natuurweten Schappelijk Onderzoek Ten Behoeve Van Nijverheid, Handel En Verkeer

Filed June 27, 1969, Ser. No. 837,167

Claims priority, application Netherlands, July 1, 1968, 6809280

Int. Cl. G01l 7/00

U.S. Cl. 73—395 **2 Claims**



In a pressure gauge for extruders a pressure-sensitive and a pressure-insensitive place of the pressure feeler are connected to the input member and to the body of a displacement meter by two identical sets of rods, to make the pressure gauge insensitive to temperature changes.

3,600,950

FLUID PRESSURE RESPONSIVE TRANSDUCER

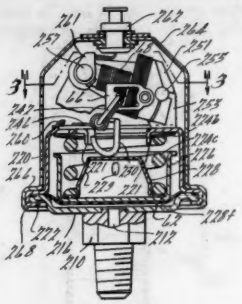
Rudolph Bergsma, Ann Arbor, Mich., assignor to Chrysler Corp., Highland Park, Mich.

Filed Aug. 5, 1969, Ser. No. 847,593

Int. Cl. G01l 9/02

U.S. Cl. 73—398 AR **5 Claims**

A fluid pressure responsive transducer of the variable impedance or rheostatic type operative over a wide range of fluid pressures and exhibiting an enhanced or increased sensitivity and response characteristic over a low-pressure portion of the operating range thereof. The device includes a displaceable diaphragm member exposed to a source of variable fluid pressure and variable impedance means operatively responsive to displacement of said member and features a



multiple rate spring in the form of a Belleville spring and a coil spring acting upon said member to provide a different rate of response to displacement of said member to low fluid pressures than that presented thereby to higher fluid pressures within the operating range of the device.

3,600,951

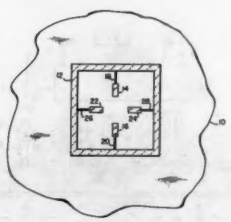
ARRANGEMENT TO MEASURE AND COMPENSATE FOR CRYSTAL ORIENTATION CHANGE

Roger L. Easton, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Mar. 12, 1969, Ser. No. 806,640

Int. Cl. G01v 7/04

U.S. Cl. 73—382 **5 Claims**



Method and apparatus for symmetrically arranging two or more crystals so that changes of orientation can be measured but will not disturb the frequency of an ultrastable crystal oscillator.

3,600,952

PRESSURE TRANSMITTER

Howard R. Jaquith, Rochester, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

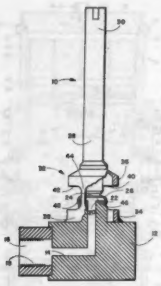
Filed Oct. 28, 1969, Ser. No. 871,874

Int. Cl. G01l 7/08

U.S. Cl. 73—406 **2 Claims**

Disclosed is a pressure transmitter having a sealing diaphragm fixed about a high pressure opening with a force

beam upstanding from the sealing diaphragm, the flexures provided for absorbing axial thrust of the diaphragm being



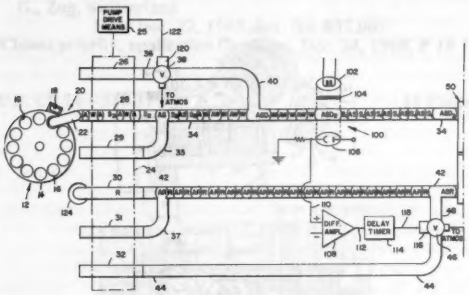
offset from the axis of the beam so that the beam is angularly deflected responsive to expansion of the diaphragm.

3,600,953

METHOD AND APPARATUS FOR THE INTRODUCTION OF AUXILIARY SEPARATING FLUID IN FLUID SAMPLE ANALYSES MEANS

Jack Isreeli, Mamaroneck; Aaron Kassel, Brooklyn, and Richard H. Heimann, Flushing, all of, N.Y., assignors to Technicon Corporation, Tarrytown, N.Y.

Filed July 25, 1969, Ser. No. 854,337
Int. Cl. G01n *1/10*
U.S. Cl. 73—423 A **20 Claims**



New and improved means for the introduction of an auxiliary separating fluid to fluid sample analysis means are provided and comprise means to introduce a series of spaced bubbles of said separating fluid to a stream of successive fluid sample portions flowing in a fluid sample analysis means conduits substantially at the respective beginning and end of each of said fluid sample portions to delineate the same, means to introduce a series of substantially phased spaced bubbles of said separating fluid to another fluid stream flowing in another fluid sample analysis means conduit, and means to flow parts, at least, of at least one of said series of separating fluid bubbles through the flow cell of said fluid sample analysis means.

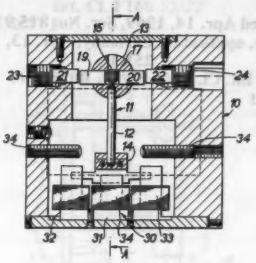
3,600,954

APPARATUS INCORPORATING MAGNETIC RESTRAINT MEANS

Walter W. H. Clarke, Eversley, England, assignor to C. B. Associates Limited, London, England

Filed Feb. 5, 1969, Ser. No. 796,879
Int. Cl. G01p *15/08*
U.S. Cl. 73—517 R **6 Claims**

An apparatus having a movable mass which is displaced upon the application of an external influence. The extent of the displacement is indicative of the magnitude of the external influence. Magnets are provided to restrain the movement of the mass, the position of the magnets relative to the



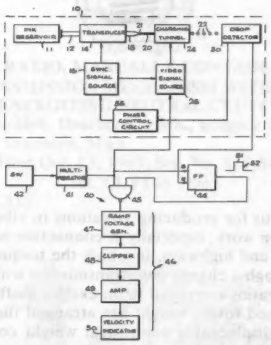
mass being adjustable whereby to vary the response of the apparatus to the external influence. The apparatus is particularly suited as an accelerometer.

3,600,955

INK DROP VELOCITY INDICATOR

Vincent Ernest Bischoff, River Grove, Ill., assignor to A. B. Dick Company, Chicago, Ill.

Filed Oct. 16, 1969, Ser. No. 867,054
Int. Cl. G01d *15/18*
U.S. Cl. 73—518 **10 Claims**

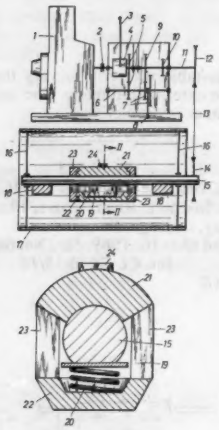


For use in an ink jet printing system a drop velocity measuring circuit comprising an astable multivibrator and a flip-flop. The multivibrator and the flip-flop are interconnected with each other and with the charging tunnel and the drop detector of the printing system so that for each pulse of the multivibrator, the flip-flop produces an output pulse whose width represents the transit time required for drops to travel from the charging tunnel to the drop detector. The output pulses of the flip-flop are supplied to a pulse width measuring circuit whose output represents the monitored or measured drop velocity. The pulse width measuring circuit includes a gated ramp generator, followed by a clipper and current amplifier which is used to drive a recorder or meter, the reading of which represents drop velocity. The meter scale is preferably calibrated to indicate the specified limits between which the drop velocity must lie for the proper operation of the ink jet printing system.

3,600,956
APPARATUS FOR PRODUCING VIBRATIONS FOR VIBRATORS FOR USE IN CONNECTION WITH CONSTRUCTION WORK

Kurt Boguth, Duisburg-Wanheimerort, Germany, assignor to Wilhelm Weller, Herstellung und Vertrieb von Strassen-Walzen, Gesellschaft mit beschrankter Haftung, Dusseldorf, Germany

Filed Apr. 14, 1969, Ser. No. 815,913
Claims priority, application Germany, Apr. 13, 1968, P 17 59 255.1
Int. Cl. F16h *33/00*; B07b *1/44*
U.S. Cl. 74—61 9 Claims



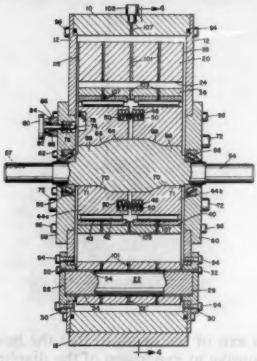
An apparatus for producing vibrations in vibrators for use in construction work, especially in connection with the building of streets and highways, in which the torque of a driving motor is through a change gear transmission with at least two transmission ratios conveyed to an exciter shaft which in addition to a fixed rotary weight has arranged thereon at least one radially displaceable centrifugal weight connected to a counter weight and supported by the exciter shaft through the intervention of spring means in such a way that the center of gravity of the unbalance producer composed of the centrifugal weight and counter weight will at the smaller transmission ratio be located approximately on the axis of rotation of the exciter shaft but will be spaced to a greater extent therefrom at the higher transmission ratio.

3,600,957
OSCILLATING POWER UNIT

Olly O. Stoffel, San Diego, Calif., assignor to Stoffel Engineering Corporation, San Diego, Calif.

Filed Sept. 18, 1969, Ser. No. 859,089
Int. Cl. F16h *33/02*; B06b *1/16*
U.S. Cl. 74—87 17 Claims

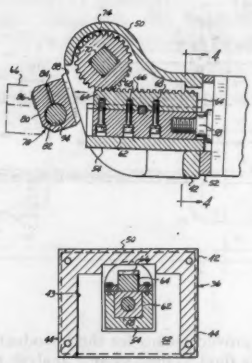
An oscillating power unit for use with a variety of tools and equipment that are vibrated in their operation. An inertial mass rocking about a fixed pivot is driven by an orbital motion eccentric mechanism in such a manner that the effective power is concentrated along one axis of motion and minimized in all other directions. The eccentric drive has a variable throw that is easily adjusted to selectively vary the oscillating power output when the unit is installed in an operating assembly without dismantling the structure, although all moving parts except the drive shaft are fully enclosed.



3,600,958
ROTATING TURNOVER ASSEMBLY

Leland F. Blatt, Grosse Pointe Woods, Mich., assignor to ISI Manufacturing, Inc., Warren, Mich.

Filed Dec. 8, 1969, Ser. No. 882,962
Int. Cl. F16h *27/02*; B25j *3/00*
U.S. Cl. 74—89.17 2 Claims



In a rotating turnover apparatus of the rack and pinion type, a novel means including a U-shaped yoke block for removably mounting a rodlike member of a turnover means on the pinion shaft, whereby the turnover means will be rotated around the axis of such shaft as such shaft is rotated axially by the pinion.

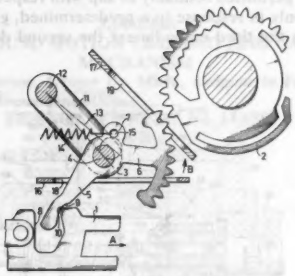
3,600,959
DEVICE FOR TRANSFER OF VALUES IN CALCULATING MACHINES

Andreas Metschnabl, Nurnberg, Germany, assignor to DIEHL, Nurnberg, Germany

Filed Aug. 6, 1969, Ser. No. 847,995
Claims priority, application Germany, Aug. 24, 1968, P 17 74 743.2
Int. Cl. F16h *29/02*; G06c *29/00*
U.S. Cl. 74—89.19 5 Claims

An arrangement for transferring reciprocatory motion of a pin carriage controlled rack member of a calculating machine to a toothed control disc which is connected to a value roller of the machine. The arrangement takes the form

of a transfer element pivoted on a shaft and having one arm abuttingly engaging the rack member and another arm in the form of a gear segment. Reciprocation of the rack member will oscillate the transfer element. The shaft is carried by a



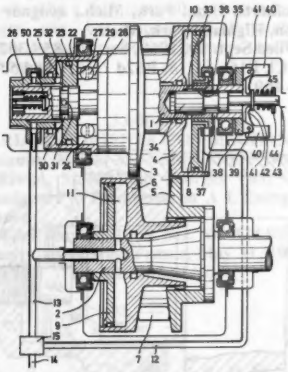
control arm and is movable to cause the gear segment to mesh with and separate from the teeth of the control disc. A spring biases the transfer element toward abutment with the rack member.

3,600,960

INFINITELY VARIABLE CONE PULLEY TRANSMISSION

Erhardt Karig; Otto Dittrich, and Manfred Rattunde, all of Bad Homburg, Germany, assignors to Reimers Getriebe A. G., Zug, Switzerland

Filed Dec. 22, 1969, Ser. No. 887,007
Claims priority, application Germany, Dec. 24, 1968, P 18 16 950.1
Int. Cl. F16h *55/22*
U.S. Cl. 74—230.17 F **16 Claims**



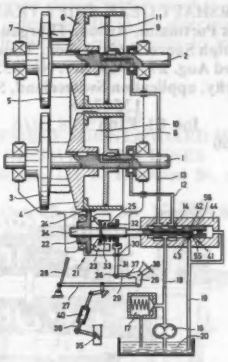
A fully hydraulic control mechanism for an infinitely variable cone pulley transmission in which the axially movable conical disk of each pulley is pressed against an endless belt or chain running between the pulleys with a different contact pressure than the corresponding disk of the other pulley. The control mechanism acts at the same time upon the axially movable disks on the driving and driven shafts of the transmission, and the contact pressure of all disks is load-responsive.

3,600,961

INFINITELY VARIABLE CONE PULLEY TRANSMISSION

Manfred Rattunde, and Otto Dittrich, both of Bad Homburg, Germany, assignors to Reimers Getriebe A. G., Zug, Switzerland

Filed Dec. 22, 1969, Ser. No. 887,009
Claims priority, application Germany, Dec. 24, 1970, P 18 16 951.2
Int. Cl. F16h *55/22*
U.S. Cl. 74—230.17 F **11 Claims**



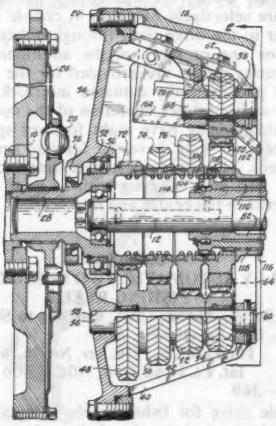
A fully hydraulic control mechanism for an infinitely variable cone pulley transmission in which the axially movable conical disk of each pulley is pressed against an endless belt or chain running between the pulleys with a different contact pressure than the corresponding disk of the other pulley. The control mechanism acts at the same time upon the axially movable disks on the driving and driven shafts of the transmission, and the contact pressure of all disks is load responsive.

3,600,962

MULTIPLE RATIO, MANUALLY CONTROLLED POWER TRANSMISSION MECHANISM WITH SELF ENERGIZING NEUTRAL CLUTCH

Peter G. Ivanchich, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 13, 1969, Ser. No. 865,841
Int. Cl. F16h *3/08*
U.S. Cl. 74—331 **8 Claims**



A power transmission mechanism having coaxially arranged power output gears, a clutch sleeve shaft surrounding

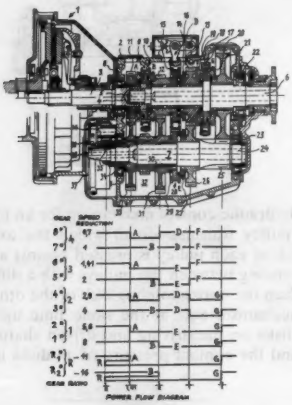
the power output shaft and adapted to slide on the output shaft into selective engagement with the output gears and a multiple disc neutral clutch connecting drivably the clutch sleeve shaft with the power output shaft including self energizing cam means for engaging the clutch with a clamping force that is proportional in magnitude to the driving torque, provision being made for manually disengaging and engaging the multiple disc assembly during speed ratio changes.

3,600,963

COUNTERSHAFT GEAR-SHIFT TRANSMISSION

August Thomas Portmann, Arbon, Thurgau, Switzerland, assignor to Adolph Saurer Ltd., Arbon, Thurgau, Switzerland

Filed Aug. 27, 1969, Ser. No. 853,316
Claims priority, application Switzerland, Sept. 11, 1968, 13567/68
Int. Cl. F16h *3/08, 5/16*
U.S. Cl. 74—360 **10 Claims**



A countershaft gear-shift transmission with constantly meshing gear pairs includes a drive shaft, a main shaft coaxial with the drive shaft and a countershaft parallel to the main and drive shafts. A first countershaft gear is fixed to rotate with the countershaft and a first main shaft gear is rotatable on the main shaft and constantly meshes with the first countershaft gear. An additional countershaft gear or gears are rotatably mounted on the countershaft and constantly mesh with gears rotatable on the drive shaft and on the main shaft. Shifting clutch means are operatively associated with the gears and are selectively operable to couple the first countershaft gear to the drive shaft through either the first main shaft gear or one or more of the additional countershaft gears. Operating means are provided for the shifting clutch means, and pneumatically actuated interlocking means are provided to assure proper operation of the operating means. The transmission may have eight forward speeds and two reverse speeds or may have 12 forward speeds and two reverse speeds. The reverse speed gearing includes a center gear and a ring gear meshing with at least one idler gear mounted between the center and ring gears.

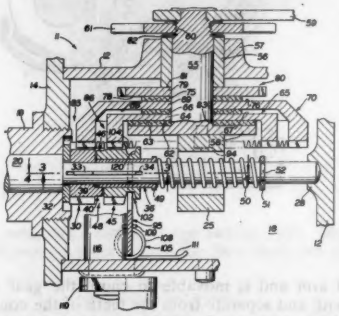
3,600,964

OPTIONALLY AUTOMATIC TWO SPEED DRIVE FOR A FISHING REEL

Thomas F. Sarah, Akron, Ohio, assignor to Shakespeare of Arkansas, Inc., Fayetteville, Ark.

Filed Mar. 5, 1970, Ser. No. 16,761
Int. Cl. F16h *3/08, 5/06, 37/06*
U.S. Cl. 74—369 **18 Claims**

A variable drive for fishing reels—adaptable with equal facility to spinning, spin-casting, bait casting and trolling type reels—to provide a high and low speed transmission ratio. Each speed ratio has a corresponding gear train operatively connected between a driving rod and a driven shaft. The two gear trains each have a driving gear carried on the driving shaft. The driving gear for at least the high speed ratio is rotatably mounted on the driving shaft, and a coupling means engages the driving gear to permit it to slip with respect to the driving shaft in response to a predetermined torque loading. The second driving gear in two of the three embodiments depicted herein is also rotatably mounted on the driving shaft and engaged by the coupling means so that the second driving gear is permitted rotatably to slip with respect to the driving shaft only in response to a predetermined, greater torque loading. In the third embodiment the second driving gear is



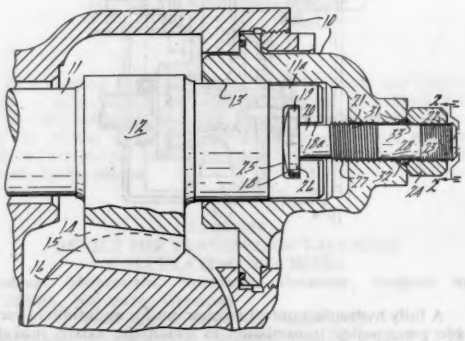
secured to the driving shaft for rotation only therewith, and the coupling means, in that embodiment, is connected between the two driving gears. The first and second driving gears mesh with corresponding first and second pinions carried on the driven shaft. The first pinion is connected to rotate only with said driven shaft, but the second pinion is mounted so as to be movable with respect to the driven shaft. A unidirectional clutch means operatively connects the two pinions so that the first pinion can overrun the second pinion but not vice versa. A selector means is also disclosed whereby the automatic selection of the speed ratios in response to the torque loading can be manually overridden.

3,600,965

POWER STEERING GEAR

Walter E. Folkerts, Hazel Park, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Sept. 19, 1969, Ser. No. 859,382
Int. Cl. F16h *55/18;* **B62d** *1/20;* **B65d** *53/00*
U.S. Cl. 74—409 **8 Claims**



An axially adjustable cross shaft for the sector gear of an automobile power steering mechanism is mounted within a housing subject to high pressure fluid. A threaded adjusting bolt secured to the cross shaft to adjust the same screws axially through and is locked in axially adjusted position by a

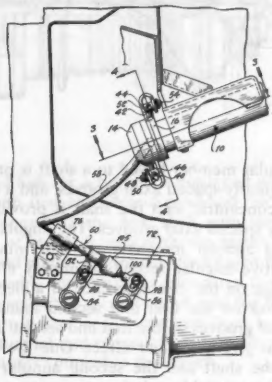
nut tightened against the housing. The threads of the nut and housing are truncated to receive an unthreaded sealing portion of the bolt shank spaced between and having a diameter approximately equal to the pitch diameter of the bolt threads engaging the housing and nut. An O-ring around the unthreaded bolt shank is confined by and forced into sealing engagement with the shank and the housing by cooperating portions of the bolt and nut.

3,600,966

COMPOUND MOTION TRANSMITTING CABLE MECHANISM

Alan P. Anderson, Grosse Ile, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 9, 1970, Ser. No. 17,658
Int. Cl. G05g *9/00*
U.S. Cl. 74—473 SW **4 Claims**



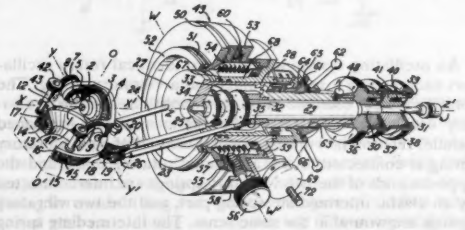
A motion transmitting cable mechanism adapted to move the shift control levers of a manually operated power transmission mechanism in an automotive vehicle driveline wherein the cable comprises two relatively movable parts, one being operatively received within the other, one part being connected to one shift lever and the other part being connected to the other shift lever, and manually controlled shift linkages operatively connected to the end of each of the cable parts whereby a shift controlling motion pattern for the shift linkages can be transmitted through the cable mechanism to the transmission shift levers to effect transmission ratio changes.

3,600,967

VARIABLE-ORIENTATION MECHANISM

Bernard Auguin, Epinay-sur-Seine; Pierre Noe, Palaiseau; Richard Riwan, Massy, and Georges Viel, Orsay, all of, France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed May 13, 1969, Ser. No. 824,050
Claims priority, application France, May 31, 1968, 153,565
Int. Cl. G05g *11/00*
U.S. Cl. 74—479 **4 Claims**



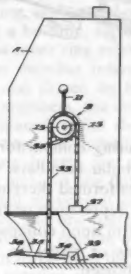
A variable-orientation mechanism which provides 6° of freedom for positioning samples. A sample-holder block is mounted to rotate about a first axis carried by a yoke which is pivoted about a second axis located at right angles to the first. The yoke is in turn carried by a support of revolution which rotates about a third axis located at right angles to the other two axes. The movements of the sample-holder about the three axes are controlled independently by a set of differential pinions and a movement produced by three concentric shafts carried by a support sleeve and driven in rotation by means of engageable operating knobs being transmitted to the differential pinions by means of a set of three rods having terminal helical screws. Means are additionally provided for displacing the support sleeve with respect to an outer cylindrical casing and independently in the direction of their common axis, in a direction at right angles to said axis and in rotation about said axis.

3,600,968

ADAPTER ASSEMBLY FOR STANDARD HAND-LEVER OPERATED MACHINES

Anthony T. D'Andrea, 121 S. Kenwood St. #20, Glendale, Calif.

Filed Oct. 23, 1969, Ser. No. 868,847
Int. Cl. G05g *11/00*
U.S. Cl. 74—481 **5 Claims**



An adapter assembly for a laterally extending actuator shaft of a machine, which normally hand-lever operated, said assembly including foot pedal connecting means for operating the actuator shaft of the machine independently of and without effecting movement of the hand lever and vice versa.

3,600,969

STEERING CONTROL MECHANISM

Alfred Pitner, Paris, France, assignor to Rueil Nadella, Malmaison, France, a part interest

Filed July 16, 1969, Ser. No. 842,241
Claims priority, application France, July 29, 1968, 160,938
Int. Cl. B62d *1/16*
U.S. Cl. 74—492 **7 Claims**

A steering control mechanism in which the steering wheel is carried by a steering shaft element which is connected to

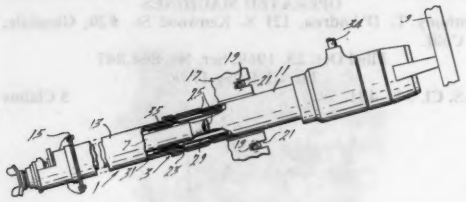
the rest of the steering control shaft structure through a universal joint. This joint has a sealing ring interposed between each cross trunnion shoulder and a flange on a needle bearing cup engaged in the corresponding yoke branch. The sealing ring is so arranged and adapted as to perform the function of a shock absorber for transverse vibrations and shocks.

3,600,970

STEERING COLUMN

Alan G. Loofbourrow, Bloomfield Hills, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Aug. 22, 1969, Ser. No. 852,361
Int. Cl. B62d *1/18*
U.S. Cl. 74—492 **13 Claims**



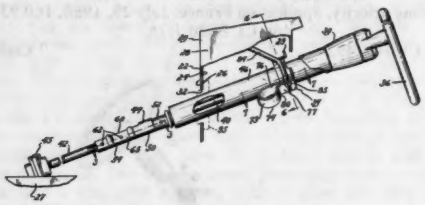
Energy absorbing steering column for a vehicle, including a pair of telescoping tubular members. One of the members has depressions or ridges formed therein in interference with the other member. The depressions or ridges cause the other tubular member to deform upon collapse. Holes may be provided in the depressions or ridges to vary the load under which the column will shorten.

3,600,971

STEERING COLUMN MOUNTING ARRANGEMENT

John Scarvelis, Southfield, and Dean A. Green, Milford, both of, Mich., assignors to American Motors Corporation, Kenosha, Wis.

Filed Sept. 8, 1969, Ser. No. 855,869
Int. Cl. B62d *1/18*
U.S. Cl. 74—492 **6 Claims**



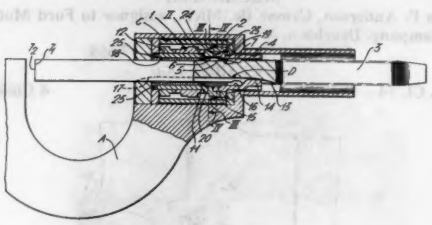
In a vehicle a mount arrangement having restraint members normally supporting the upper end of a collapsible steering column having a coupling arrangement adapted, on occurrence of a collision impact on the column, in separating the column into independently movable upper and lower columnar sections at a load less than being needed to overcome the restraint members to yield in movement the attached upper columnar section, the yield being had by the members deforming and reforming, without detachment from the column or vehicle, in absorbing the energy of the impact occurring on the steering wheel.

3,600,972

DEVICE INCLUDING MEANS FOR SETTING A FIRST ROTATABLE MEMBER RELATIVE TO A SECOND ROTATABLE MEMBER

Eric John Elliott, St. Albans, England, assignor to English Numbering Machines Limited, London, England

Filed Jan. 9, 1970, Ser. No. 1,756
Claims priority, application England, Jan. 18, 1969, 3,050/69
Int. Cl. G05g *5/06*; F16h *27/02*
U.S. Cl. 74—527 **2 Claims**



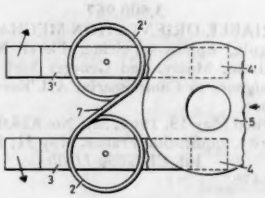
A first annular member keyed to a shaft is provided internally with regularly spaced axial grooves, and a second annular member concentric with the shaft is provided internally with regularly spaced axial grooves. The angular positions of the individual annular members are determined and their resulting relative angular setting accurately effected by arranging a ridge on the circumference of a sleeve to engage aligned grooves on the first and second annular members. The number of grooves on the first and second annular members differs to give a Vernier effect. One the sleeve effects the setting, the shaft and the second annular member are coupled to be rotatable relative to a common reference point.

3,600,973

OSCILLATING SYSTEM

Albrecht Haag, Schwenningen am Neckar, Germany, assignor to Kienzle Uhrenfabriken GmbH, Schwenningen am Neckar, Germany

Filed Oct. 16, 1969, Ser. No. 866,973
Claims priority, application Germany, Oct. 29, 1968, P 18 05 777.7
Int. Cl. F16f *15/12*
U.S. Cl. 74—574 **7 Claims**



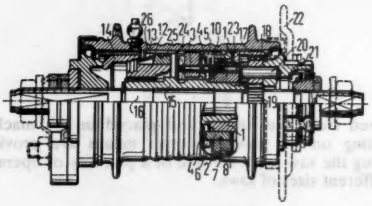
An oscillating system includes two identical rotary oscillators each having a rotating mass and a vibratory spring. The rotating masses oscillate in phase opposition, and the two rotary oscillators have respective shafts mounted in spaced parallel relation in working plates. One end of each vibratory spring is connected to the associated rotating mass, and the opposite ends of the two vibratory springs are interconnected by an elastic intermediate spring part, and the two vibratory springs are wound in the same sense. The intermediate spring part extends substantially perpendicular to the shafts and is integral with the two springs. The springs may be helical springs or flat coil springs.

3,600,974

MULTIPLE-SPEED DRIVE ARRANGEMENT WITH CENTRIFUGAL GOVERNOR

Hans-Joachim Schwerdhofer; Manfred Lutz, and Horst Schulz, all of Schweinfurt am Main, Germany, assignors to Fichtel & Sachs AG, Schweinfurt am Main, Germany

Filed Nov. 12, 1969, Ser. No. 876,019
Claims priority, application Germany, Nov. 15, 1968, P 18 09 141.3
Int. Cl. F16h *5/42*
U.S. Cl. 74—752 E 8 Claims



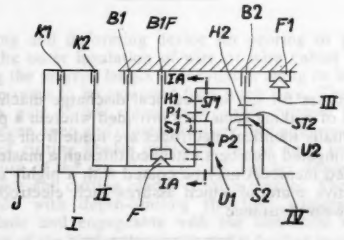
A dual-speed hub for a bicycle is equipped with planetary gearing and with first and second pawl-and-ratchet clutches respectively connecting the hub shell with the driver and planet carrier of the hub, and with the faster turning ring gear. The second clutch is normally disengaged by a centrifugal governor having spring-loaded, elongated flyweights. The motion for engaging the second clutch and for thereby shifting the hub into higher gear is derived from bosses or pins near the longitudinal end of each flyweight which is pivoted to a rotating carrier coupled to the driver.

3,600,975

PLANETARY-GEAR TRANSMISSION WITH ALTERNATELY DRIVEN SUN GEARS

Anton Ott, Friedrichshafen, Germany, assignor to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Germany

Filed Sept. 4, 1969, Ser. No. 855,136
Claims priority, application Germany, Sept. 6, 1968, Z 12 080;Z 12 081
Int. Cl. F16h *57/10*
U.S. Cl. 74—761 4 Claims



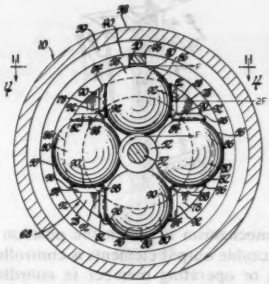
An automotive transmission with two cascaded planetary gear trains has the ring gear of one gear train and the planet carrier of the other gear train rigidly connected with each other and with the output shaft, the input shaft being connectable with the sun gear of the last-mentioned gear train during forward driving and with the sun gear of the first-mentioned gear train during reverse driving. The sun gear driven in the several forward speeds has a larger radius than the one driven in reverse, the corresponding ring gears being of substantially identical diameters.

3,600,976

FRICTION DRIVE MECHANISM

Lubomyr O. Hewko, Port Clinton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 25, 1970, Ser. No. 14,299
Int. Cl. F16h *13/06, 15/50*
U.S. Cl. 74—798 11 Claims



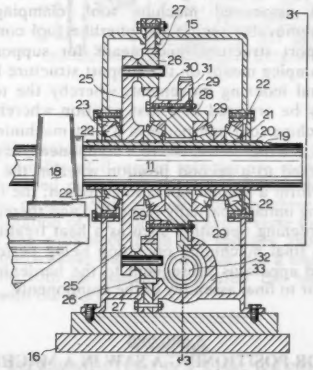
A power-transmitting and speed-reducing friction drive mechanism including a housing, input and output shafts, an outer ring member, an inner ring member, an axially extending cylindrical carrier member intermediate the outer and inner ring members and driven by ball planets frictionally contacting both ring members, the carrier member having a plurality of equally spaced radial slots formed therein for receiving oppositely disposed hydrodynamic bearing inserts or shoes. The bearing inserts are conical at their outer peripheries, and each includes one flat bearing face for axial, radial and/or rotational movement on one of the sides of each of the radial slots, and one partial-spherical or concave bearing face for receiving a portion of each of a plurality of ball planets to transmit force from the ball planets to the carrier, and provide for rotation of the ball planets relative to the bearing insert and movement of the bearing insert relative to the carrier.

3,600,977

SHAFT-MOUNTED REDUCTION DRIVE MECHANISM

Nelson H. Bogie, Rte. 1, Gilbertsville, Ky.

Filed Apr. 10, 1970, Ser. No. 27,363
Int. Cl. F16h *1/28;* B65g *13/02;* B66d *1/12*
U.S. Cl. 74—801 4 Claims



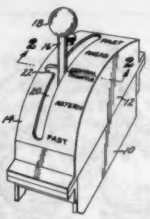
A drive mechanism including a frame suspended upon a driven roller shaft, and a two-stage reduction assembly and drive motor mounted on the frame. The first reduction stage comprises a worm wheel and a worm driven by the motor, and the second reduction stage comprises a planetary gear assembly coupled to the worm wheel and the roller shaft.

3,600,978

CLUTCH AND THROTTLE CONTROL FOR OUTBOARD MOTORS

John W. Turner, 2021 North Ross, Santa Ana, Calif.

Filed Aug. 13, 1969, Ser. No. 849,709
Int. Cl. B60k *21/00*
U.S. Cl. 74—875 **13 Claims**



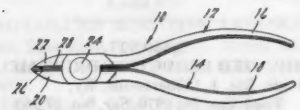
Controller mechanism in which the position of two rotationally displaceable output elements is controlled from a single displacing or operating member in coordinated fashion through the medium of a motion translating structure employing two cams rotatable on a single shaft and formed so that one output member is rotated in a direction and degree determined by the direction and degree of movement of the displacing member over a midregion only of its total displacement range and so that the other control element is repositioned in a degree determined by the position of the operating element outside that midrange.

3,600,979

METHOD AND APPARATUS FOR MANUFACTURING PLIER-LIKE TOOLS

Walter J. Rozmus, Hubbardsville, N.Y., assignor to Utica Tool Company, Inc., Orangeburg, S.C.

Filed Dec. 4, 1968, Ser. No. 781,018
Int. Cl. B21k *21/00*
U.S. Cl. 76—101 R **20 Claims**



A method and apparatus for manufacturing plierlike tools, with the apparatus consisting of a support structure disposed adjacent an associated machine tool; clamping means adapted to removably secure the plierlike tool components on the support structure, and means for supporting the aforesaid clamping means on the support structure for selective rotational indexing movement, whereby the tool components may be oriented in a first position wherein the associated machine tool can perform a first machining operation thereon and thereafter, the tool component may be rotationally indexed to a second position wherein the machine tool can perform a second operation thereon; the tool components being initially partially machined and thereafter subject to a hardening operation such as a heat treating operation, with a final machining operation being performed by the aforesaid apparatus subsequent to the hardening operation and prior to final assembly of the components.

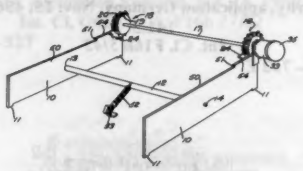
3,600,980

DEVICE FOR POSITIONING A SAW IN A MACHINE FOR OPERATING ON THE TEETH OF THE SAW

Sulo A. Aijala, Attleboro, Mass., assignor to Intricate Machine & Engineering Inc.

Filed Dec. 1, 1969, Ser. No. 881,011
Int. Cl. B23d *63/00*
U.S. Cl. 76—25 **6 Claims**

A device separate from a machine for retoothing or sharpening a saw which device is to be used for locating a saw with respect to a saw holder and with respect to the means to perform a particular operation on the teeth, after which the saw is clamped on the saw holder and the holder and saw are



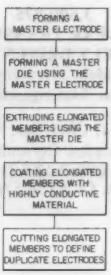
removed from the device and placed in the machine for operating on the saw. Selective means are provided for abutting the saw teeth for one of a plurality of operations or for different sizes of saws.

3,600,981

ELECTRODES FOR ELECTRICAL DISCHARGE MACHINING AND OF MAKING SUCH ELECTRODES AND ASSOCIATED DIES

Nicholas A. Wagner, Chester, Va., assignor to Reynolds Metal Company, Richmond, Va.

Filed Nov. 13, 1969, Ser. No. 876,531
Int. Cl. B21k *5/20*
U.S. Cl. 76—107 R **13 Claims**


FORMING A MASTER ELECTRODE
FORMING A MASTER DIE USING THE MASTER ELECTRODE
EXTRUDING ELONGATED MEMBERS USING THE MASTER DIE
COATING ELONGATED MEMBERS WITH HIGHLY CONDUCTIVE MATERIAL
CUTTING ELONGATED MEMBERS TO DEFINE DUPLICATE ELECTRODES

Electrodes for use in electrical discharge machining, and method of making same, are provided wherein a plurality of substantially identical electrodes are made from sections cut from elongated members extruded through a master die. The elongated members may be coated with a highly electrically conductive material which assures each electrode has optimum wear resistance.

3,600,982

JAR COVER REMOVER

John G. Tholen, 27 Ospery Drive, Toms River, N.J.

Filed Nov. 12, 1969, Ser. No. 876,008
Int. Cl. B67b *7/18*
U.S. Cl. 81—3.4 **5 Claims**

A screw cover remover having a handle at one end thereof with a cavity at the opposite end thereof adapted to encompass the cover of the jar to be removed and containing therein gripping means to frictionally retain the screw cover remover fixed relative to the jar cover to remove the latter. The gripping means in accordance with one aspect of the in-

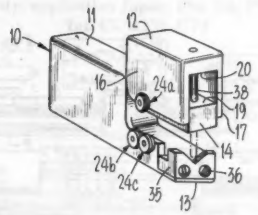
vention includes spaced apart members having a threaded face extending in a substantially horizontal plane to bind up against the side or corner of the cover. In another form the members contain teeth extending substantially vertical for engagement with the jar cover.

3,600,983

CUTTING AND DEFORMING DEVICE FOR WIRE INSULATION

Robert B. Hendry, 45833 Warm Springs Blvd., Fremont, Calif.

Filed Feb. 7, 1969, Ser. No. 797,573
Int. Cl. H02g 1/12; B21f 13/00; B26h 97/00
U.S. Cl. 81—9.5 13 Claims



A cutting and deforming device for scoring or partially severing the outer insulation of wire or wire cables and for deforming the severed length of insulation along its length to enable the same to be removed from such wire. The device includes a pair of jaw elements movable relative to each other between open and closed positions and equipped with a plurality of cutting blades operative to cut such insulation upon closure of the jaw elements and angular displacement of the device and cutting blades relative thereto. The device is equipped with depth-limiting structure adjacent each cutting blade and engageable with the insulation to limit penetration of the blades thereinto; and it further includes an anvil and a deforming blade respective carried by the jaw elements and cooperative to deform a cut or severed length of insulation to facilitate removal thereof from the wire.

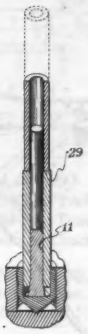
3,600,984

EXPANSIBLE ALLEN SETSCREW WRENCH

John D. Bihlmaier, 1735 W. Haskell St., Tulsa, Okla.

Filed Apr. 28, 1969, Ser. No. 819,633
Int. Cl. B25b 13/48
U.S. Cl. 81—72 4 Claims

An expansible Allen setscrew wrench is bored centrally to receive a tapered core and is slotted at its end that enters the noncircular recess of the setscrew. A removable driving sleeve is fitted over the core and is struck to drive the wrench down on the taper to expand the slotted end of the wrench into firm engagement with a setscrew. After the setscrew is removed, the sleeve is removed and the core is struck to release the unmoved setscrew.

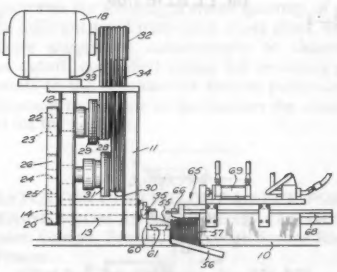


3,600,985

APPARATUS FOR MACHINING A PLURALITY OF LIKE ARTICLES SIMULTANEOUSLY

Lucien W. Carignan, East Providence, R.I., assignor to New England Malleable Iron Company

Filed Oct. 10, 1968, Ser. No. 766,595
Int. Cl. B23b 3/34
U.S. Cl. 82—3 4 Claims



A finishing machine for the male section of a pipe union in which a plurality of threaded spindles are manually loaded with a threaded pipe union section and then the sequential operations of cross slide and end slide machine the section, stop the rotation of the workpiece and reverse the spindles to unthread the workpiece from the spindles and whereupon they fall into a chute and are conveyed into a tote box, all automatically with no manual labor after the loading of the spindles with the work.

3,600,986

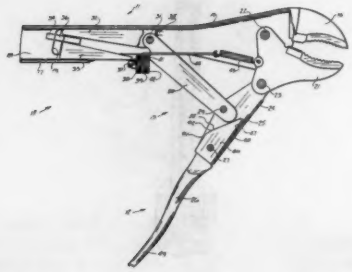
SELF-ADJUSTING LOCKING WRENCH

Earl M. Baldwin, Jr., Box 68, Glenvil, Nebr., assignor to Leverage Tools, Incorporated, Glenvil, Nebr.

Filed Aug. 27, 1968, Ser. No. 755,698
Int. Cl. B25b 7/12, 7/14, 5/12
U.S. Cl. 81—370 2 Claims

This invention pertains to a self-adjusting locking wrench, having plierlike handles, which firmly and securely grips an object of any size or thickness, within predefined limits, with substantially the same amount of pressure. The wrench,

utilizing a pair of wedges and toggle link, has a pressure adjustment means for varying the pressure; a quick release



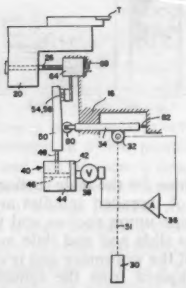
lever and an improved toggle link for opening the wrench when it is securely gripping an object, the lever also serving as one of the handles of the wrench.

3,600,987

APPARATUS FOR COMPENSATING FOR DEVIATIONS IN THE STRAIGHTNESS OF THE BED OF A MACHINE TOOL

Frank Kvasnicka, Mount Lebanon, Pa., assignor to Blaw-Knox Company, Pittsburgh, Pa.

Filed Mar. 13, 1969, Ser. No. 807,023
Int. Cl. B23b *3/00*
U.S. Cl. 82—1 **5 Claims**



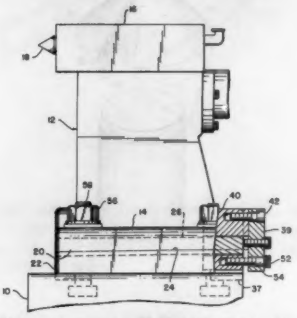
An apparatus for compensating for deviations in the straightness of the bed of a machine tool including a laser means providing the reference of straightness. A laser transmitter directs a laser beam which serves as the reference of straightness and a receiver is mounted on the carriage for movement therewith and is arranged to detect misalignment of the carriage from the reference of straightness and to provide an error signal which is received by a control means which moves a tool supporting means on the carriage to compensate for the bed deviation.

3,600,988

MULTIPLE ADJUSTABLE STOCK

Kenneth J. Davis, Warren, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed July 7, 1969, Ser. No. 839,575
Int. Cl. B23b *23/00*
U.S. Cl. 82—31 **6 Claims**



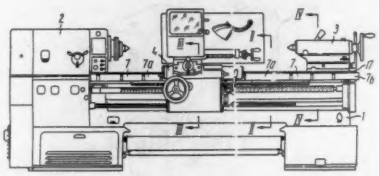
Means for adjusting one of a pair of stocks both vertically and laterally to bring it into exact alignment with the other stock.

3,600,989

METAL-CUTTING MACHINE

Jury Stepanovich Valkov, ulitsa Belinskogo, 8, kv. 5, Frunze, U.S.S.R.

Filed June 24, 1969, Ser. No. 836,044
Int. Cl. B23b *3/06*
U.S. Cl. 82—34 **2 Claims**



A metal-cutting machine in which a carriage is mounted for movement along guides having a lubricating film on their working faces and telescopically parting plates serve as a protective means for the guides. The plates are assembled in groups at both sides of the carriage so that in each group, the first plates are connected with the carriage and the last plates mechanically connected with a stationary member of the machine. The carriage has passages for forced lubrication of the guides working faces and protective strips located above the plate groups and along the guides pass through slots with the coupling between the last plate of each group with the stationary member including a mechanism for periodical connection of the plates with the carriage during its movement to the extreme positions.

3,600,990

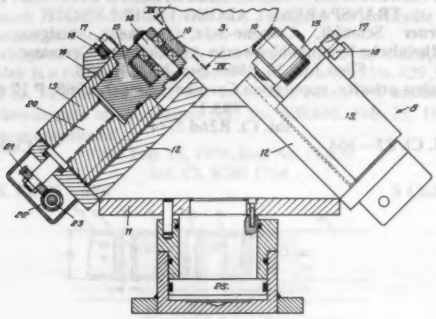
MACHINE-TOOL

Pierre E. Renoux, Colombes, France, assignor to Cri-Dan, Paris, France

Filed June 20, 1969, Ser. No. 834,968
Claims priority, application France, Aug. 1, 1968, 161,420
Int. Cl. B23b *25/00*
U.S. Cl. 82—38 **8 Claims**

A feed support device for use in conjunction with a machine-tool, particularly a lathe, for permitting a workpiece to be selectively supported for either translational or rota-

tional motion. The feed support device includes a pair of cylindrical support rollers rotatably mounted on independent swivel members which are rotatable about axes which converge toward one another. Suitable actuating devices are connected to the swivel members for permitting the swivel members and the cylindrical rollers mounted thereon to be



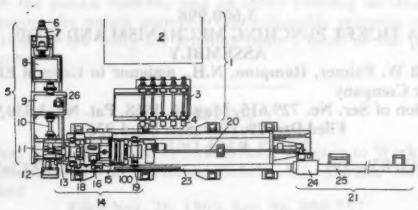
angularly displaced between a first position wherein their axes are substantially parallel to the axis of the workpiece so as to be disposed in rotational contact with the workpiece, and a second position wherein the rotational axes are substantially perpendicular to the axis of the workpiece so as to permit translational movement of the workpiece.

3,600,991

FLYING PIPE CUTTING APPARATUS

Shigeo Kojima; Tsutomu Nishi; Tetsunoke Ogo, and Tetsuo Sasaki, all of Kawasaki-shi, Japan, assignors to Nippon Kokan Kabushiki Kaisha

Filed Oct. 14, 1968, Ser. No. 767,234
Claims priority, application Japan, Oct. 14, 1967, 42/65,892
Int. Cl. B23b *5/14*
U.S. Cl. 82—53.1 **7 Claims**



In a flying pipe cutting apparatus a carriage carrying a cutting machine is started by means detecting the speed of a continuously running pipe being cut and a plurality of clamping mechanisms are operated to clamp the pipe when the cutting machine attains the same speed as the running pipe. Thereafter the cutting machine is moved by the running pipe and a cutter is urged against the pipe at an incremented speed provided by a differential gear mechanism located between clamping mechanisms.

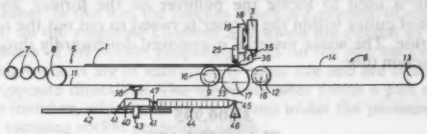
3,600,992

DEVICE FOR THE SCORING OF A GLASS SHEET

Jacques Max Dryon, Auvelais, Belgium, assignor to Ateliers Heuze, Malevez & Simon Reunis Societe Anonyme, Auvelais, Belgium

Filed Oct. 27, 1969, Ser. No. 869,510
Claims priority, application Belgium, Dec. 9, 1968, 67.231/68
Int. Cl. B26d *3/08*
U.S. Cl. 83—12 **6 Claims**

An apparatus for scoring a sheet of glass wherein the tool carriage moves along a fixed gantry located over the glass. The glass is moved into scoring position using initially a primary and then a secondary power means for the work moving conveyor.

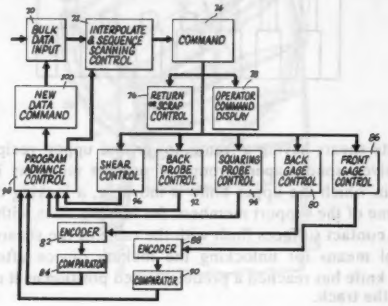


3,600,993

SHEARING APPARATUS

Ronald S. Williams, Knoxville, Tenn., and John J. Erhart, Cincinnati, Ohio, assignors to Cincinnati Incorporated, Cincinnati, Ohio

Division of Ser. No. 713,088, Mar. 14, 1968.
Filed Jan. 9, 1970, Ser. No. 1,796
Int. Cl. B26d *5/30*
U.S. Cl. 83—71 **3 Claims**



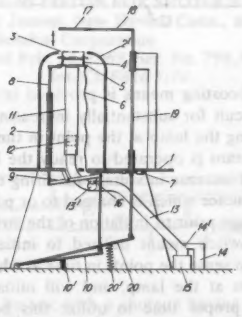
The apparatus for shearing a stated quantity of each of a number of different sized parts from sheet stock including a shear having gauges set automatically to determine the amount of cutoff, controlled means for returning predetermined cutoffs to the operator for further processing, and a control structure to indicate to an operator the orientation of stock feed for the next cut.

3,600,994

APPARATUS FOR CUTTING OUT A NECK-PORTION OPENING FROM AN ARTICLE OF CLOTHING

Jean Zapater, Ganges, France, assignor to Societe Rhodiaceta, Paris, France

Filed Nov. 14, 1969, Ser. No. 876,878
Claims priority, application France, Nov. 15, 1968, 173992
Int. Cl. B26d *7/06*
U.S. Cl. 83—100 **6 Claims**



Apparatus for cutting the neck portion opening of an article of clothing, e.g. a pullover, of thermoplastic material in-

cluding a hollow, bust-shaped former having an aperture in the flattened upper portion thereof. A transparent reference plate is used to locate the pullover on the former, and a heated cutter within the former is raised to cut out the neck portion. The waste material is removed downwardly through a suction tube.

3,600,995

PLATE SHEARS

Eduard A. Hanni, Zofingen, Switzerland, assignor to Hammerle A.G., Zofingen, Switzerland

Filed Nov. 17, 1969, Ser. No. 877,187
Claims priority, application Austria, Nov. 15, 1968, A11161/68
Int. Cl. B26d *7/06*
U.S. Cl. 83—157 **4 Claims**

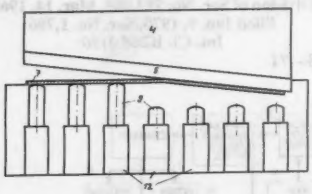


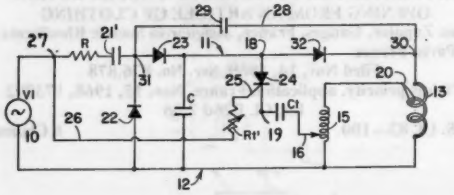
Plate shears having a frame, lower and upper, reciprocable knives, spaced-apart groups of support members in the track in which the upper knife is movable, a locking device for some of the support members, for holding them with their upper contact surfaces flush with the table of the shears, and control means for unlocking the locking device after the upper knife has reached a predetermined position as it moves along the track.

3,600,996

STROBOSCOPIC LAMP CIRCUITS

Henry N. Switsen, Los Angeles, Calif.

Filed Nov. 5, 1969, Ser. No. 874,098
Int. Cl. H05b *37/00*
U.S. Cl. 315—200 **6 Claims**



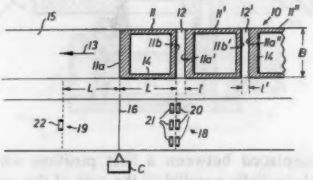
A voltage boosting means is provided in a stroboscopic lamp firing circuit for substantially increasing the available voltage for firing the lamp at the point in time that the normal striking means is operated to ready the lamp for firing. The substantial increase in voltage for firing the lamp is provided by a capacitor which is charged to or partly to the normal firing voltage prior to initiation of the striking means for the lamp. A switch means utilized to initiate the striking means is able to sense the points in time at which the boosted voltage appears at the lamp, and will initiate the striking means at the proper time to utilize this boosted voltage. Since the operation of the switch means, which operation also operates the striking means, occurs when the boosted voltage is available to the lamp, substantially increased voltage is provided at the proper time for assuring firing of the lamp.

3,600,997

METHOD OF AND APPARATUS FOR EFFECTING SEVERANCE OF WEBS IN RESPONSE TO CHANGES IN TRANSPARENCY ALONG THEIR LENGTH

Werner Schmidt, Cologne-Sulz, Germany, assignor to Rheinische Braunkohlenworke AG, Cologne, Germany

Filed July 30, 1969, Ser. No. 846,075
Claims priority, application Germany, Aug. 2, 1968, P 17 61 993.1
Int. Cl. B26d *5/34*
U.S. Cl. 83—364 **8 Claims**



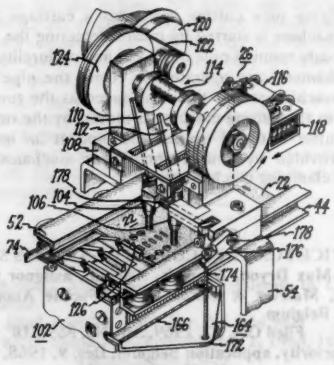
In order to automatically cut to size nonuniformly spaced photographs arranged serially to constitute a continuous web, a cutting mechanism to sever the web transversally is operated upon sensing the change in the transparency of the web between a dark margin that frames each photograph and a light strip separating each margin from that of an adjacent photograph. There are provided a first photoelectric sensing station which generates a control signal to stop the web feed and effect cutting when the leading edge of a photograph coincides with the severing path of the cutting mechanism and a second photoelectric sensing station which generates a control signal to stop the web feed and effect cutting when the trailing edge of the same photograph coincides with said severing path.

3,600,998

A TICKET PUNCHING MECHANISM AND STOP ASSEMBLY

Ansell W. Palmer, Hampton, N.H., assignor to General Electric Company

Division of Ser. No. 729,615, May 16, 1968, Pat. No. 3,530,968
Filed Dec. 29, 1969, Ser. No. 1,936
Int. Cl. B26d *5/02, 7/16*
U.S. Cl. 83—391 **2 Claims**



A ticket punching mechanism and stop assembly especially useful in a ticket transport device. The ticket punching

mechanism has a punch member moved into ticket punching engagement by means of a crank device. The stop assembly includes a plurality of slide bars actuated by solenoid devices to place a predetermined slide bar in stopping position with a ticket to provide for a predetermined punching of the ticket.

3,600,999

PUNCHING TOOL ASSEMBLY

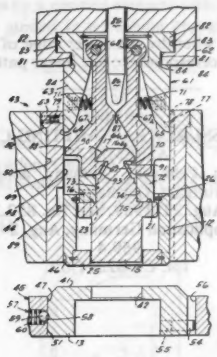
Dennis Daniels, Williamsville, N.Y., assignor to Houdaille Industries, Inc., Buffalo, N.Y.

Division of Ser. No. 696,027, Jan. 5, 1968, Pat. No. 3,530,750, which is a continuation-in-part of application Ser. No. 629,335, Feb. 6, 1967, now Pat. No. 3,449,991, which is a continuation-in-part of application Ser. No. 528,856, Feb. 21, 1966, now abandoned

Filed Feb. 16, 1970, Ser. No. 11,639

Int. Cl. B26f *1/14*

U.S. Cl. 83—686 **5 Claims**



A punch-member holder and drive assembly for being reciprocated in a guide portion of a punch press, said assembly comprising a body guided by said guide portion for reciprocation, the body having a lower surface engageable with the punch member and an inner locating surface also engaging the punch member, and releasable gripping means carried by the body for latching onto a head of the punch member.

3,601,000

ROCKET LAUNCHER

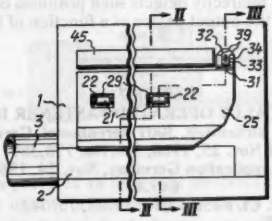
Albert Schneider, Zurich, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlinkon-Buhrle AG, Zurich, Switzerland

Filed Nov. 28, 1969, Ser. No. 880,757

Claims priority, application Switzerland, Nov. 29, 1968, 17887

Int. Cl. F41f *3/04*

U.S. Cl. 89—1.801 **5 Claims**



A rocket launcher having a magazine chamber which houses a loading tray which terminates into a launcher tube. A conveyor roller for feeding the rockets laterally into the loading tray. An apertured closure member having a backscattering surface for the emerging rocket propelling gases and an apron member which acts as a further backscattering surface for the chamber arranged on the magazine chamber. In this way the torques which are exerted, in operation, on the magazine chamber and which are caused by the pressure of the rocket propelling gases on the two backscattering surfaces are of substantially equal size and are directed in opposite directions. The apron member forms a part of a flap member, which can be swung out under the pressure of the escaping rocket propelling gases.

3,601,001

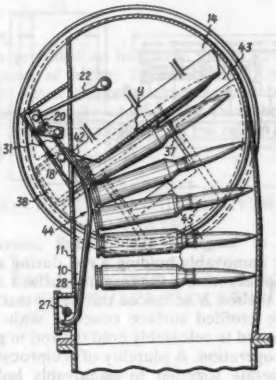
ARRANGEMENTS FOR GUIDING CARTRIDGE BELTS

Erich Jenny, Dubendorf, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland

Filed Sept. 22, 1969, Ser. No. 859,735

Int. Cl. F41d *9/00*

U.S. Cl. 89—33 BB **4 Claims**



Means for guiding a cartridge belt from a first duct into a second duct pivotable relatively to the first duct through an aperture in a rotatable disc arranged parallel to the cartridges of the belt present in the ducts. A guide rail is arranged on a wall of the first duct and the wall is behind the end surfaces of the cartridges of the belt. The guide rail can be shaped in accordance with the position of the second duct relatively to the position of the first duct. A part of the guide rail, adjacent an aperture in the rotatable disc, is in each position of the disc arranged substantially parallel to the end surface of the cartridge passing through the aperture in the disc. The said part is pivotably mounted on a lever which is pivotable about an axis stationary relative to the first duct and a further part of the guide rail is pivotably mounted on the first duct. A rod is pivotably mounted, at or near one end, on the disc and, at or near the respective other end, on the lever.

3,601,002

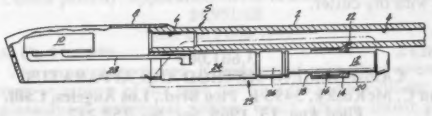
GAS PISTON FOR SHOTGUN

Stefan Kenneth Janson, New Haven, Conn., assignor to Olin Mathieson Chemical Corporation

Filed Feb. 14, 1969, Ser. No. 799,380

Int. Cl. F41d *5/10*

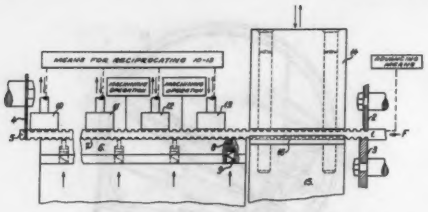
U.S. Cl. 89—191 **7 Claims**



A gas piston for use with a shotgun having a gas cylinder disposed externally on a tubular magazine, the piston being slidably mounted on the magazine. The piston includes a

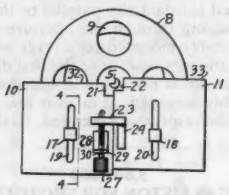
piston sleeve loosely mounted on the magazine and a piston head flexibly connected to the piston sleeve. The piston head may be longitudinally split for radial flexure, and a split ring may be interposed between the piston head and the piston sleeve for opposite radial flexure.

3,601,003
DEVICE FOR IMMOVABLY HOLDING A ROD DURING A MACHINING OPERATION
Roland Guyot, Cortaillod, Switzerland, assignor to Lamex S.A., La Choux de Fonds, Switzerland
Filed Feb. 25, 1969, Ser. No. 802,140
Claims priority, application Switzerland, May 29, 1968, 7947/68
Int. Cl. B23c *3/00, 9/00*
U.S. Cl. 90—11 R **3 Claims**



A device for immovably holding a rod during a machining operation comprises means for forming surface contours on the rod before the rod is advanced through a machining zone and a movable profiled surface coacting with the surface contours on the rod to releasably hold the rod in place during the machining operation. A plurality of reciprocating holding members cooperate together to immovably hold the contoured rod against the profiled surface during the machining operation.

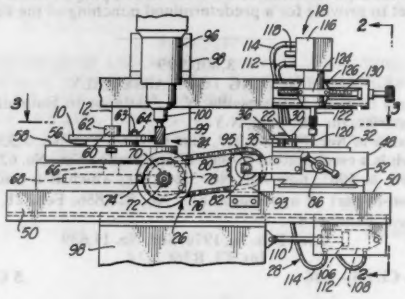
3,601,004
COMBINATION OF A ROUTER AND JOINTER
Yasuo Oshiro, 99-138 A Waipao Place, Aiea, Hawaii
Filed Aug. 27, 1969, Ser. No. 853,457
Int. Cl. B23c *1/20;* **B27c** *5/10*
U.S. Cl. 90—12 **4 Claims**



The combination of a router and jointer which is so arranged that the cutter thereof is aligned with the joint line of a pair of base plates which is coupled together for sliding relationship; and wherein the movable plate is microadjustable with the cutter.

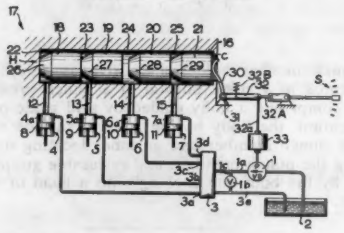
3,601,005
CAM-FORMING METHOD AND APPARATUS
John C. McKusick, 3495 E. Pico Blvd., Los Angeles, Calif.
Filed Aug. 13, 1968, Ser. No. 752,217
Int. Cl. B23c *1/18*
U.S. Cl. 90—13.9 **11 Claims**

A method and apparatus wherein a predetermined linear pattern is scanned at a given rate while a cam blank is rotated at a related rate and cut or marked at a radial distance which varies instantaneously with lateral changes in



the linear pattern whereby the outer edge of or marking on the finished cam corresponds to the linear pattern.

3,601,005
FLUID-PRESSURE-TRANSMITTING CONTROL ASSEMBLY
Gunther Schwerin, Fellbach, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Aug. 22, 1969, Ser. No. 852,337
Claims priority, application Germany, Aug. 24, 1968, P 17 51 959.4
Int. Cl. B23f *1/00*
U.S. Cl. 91—1 **12 Claims**

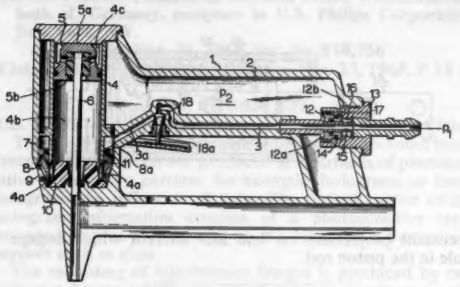


A control assembly which can adjust a regulator, gage, switch, potentiometer or another output device as a function of changes in fluid pressure comprises a housing whose chamber accommodates a row of coaxial plungers defining with the housing a series of compartments each communicating with a fluid-operated cylinder and piston unit wherein the pressure of fluid varies. The positions of plungers with reference to each other and with reference to the housing are indicative of fluid pressure in that compartment wherein the pressure is highest whereby a diaphragm, a lever or a like element directly or indirectly detects such positions of the plungers and adjusts the output device as a function of the highest fluid pressure.

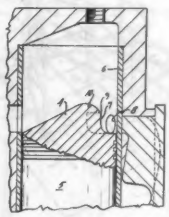
3,601,007
PNEUMATICALLY OPERATED FASTENER DEVICE
Jurgen Korth, 7 Birkenweg, 3001 Berenbostel, Germany
Filed Nov. 25, 1968, Ser. No. 778,389
Claims priority, application Germany, Nov. 24, 1967, P 16 03 847.4
Int. Cl. F15b *15/17, 11/08, 13/042*
U.S. Cl. 91—165 **7 Claims**

In a pneumatically operated fastener device with a movable piston which is returned by compressed air to its initial position, a differential piston valve means is provided to cause a pressure difference between compressed air supplied to one side of the piston and compressed air supplied to the

other side of the piston for moving the piston from an extended position to its initial position. The difference in pressure is obtained by a control element which slides in a supply passage and is guided in a bushing engaging the housing of said device.

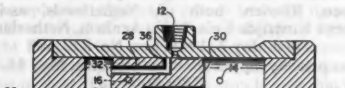


3,601,008
ENGINE PISTON
Charles F. Alexander, Jr., Oshkosh, Wis., assignor to Brunswick Corporation, Chicago, Ill.
Filed Sept. 10, 1969, Ser. No. 856,584
Int. Cl. F02f *3/24*
U.S. Cl. 92—141 **8 Claims**



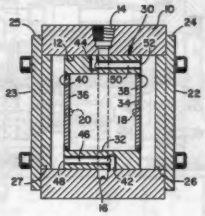
The baffle on the piston for a two-cycle engine has a sharp upper edge formed by an obtuse angle and a crowned top constructed to prevent overheating and destruction of the upper edge of the baffle.

3,601,009
PNEUMATICALLY DRIVEN SMALL DIAMETER PISTON STRUCTURE
Warren C. Burgess, Jr., Avon Lake, Ohio, assignor to Burgess & Associates, Inc., Lakewood, Ohio
Filed June 20, 1969, Ser. No. 835,003
Int. Cl. F011 *21/02*
U.S. Cl. 91—234 **5 Claims**



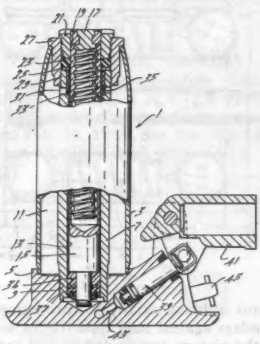
There is provided an improved structure for a small diameter piston used in a pneumatically driven free-piston vibration-inducing device. Such devices are subject to "surging" or variation in frequency. "Surging" is controlled or eliminated in such pistons by including means for restricting the piston surface area at minimum clearance from the cylinder wall, e.g. the provision of a peripheral groove or recess.

3,601,010
PNEUMATIC VIBRATION-INDUCING DEVICE
Warren C. Burgess, Jr., Avon Lake, Ohio, assignor to Burgess & Associates, Inc., Lakewood, Ohio
Filed Apr. 16, 1969, Ser. No. 816,497
Int. Cl. F011 *21/02*
U.S. Cl. 91—234 **5 Claims**



There is provided an improved piston structure enabling the attainment of higher frequencies of vibration without sacrifice of piston diameter characterized by a cylindrical piston having a density which is less than the density of the housing. In a specific embodiment, the piston is hollow.

3,601,011
DIFFUSION RING FOR LIMITING HYDRAULIC RAM TRAVEL
Lyle L. Arnes, Racine, Wis., assignor to Tenneco Inc.,, Houston, Tex.
Filed July 22, 1969, Ser. No. 843,366
Int. Cl. F15b *15/22, 21/04;* **F01b** *31/18*
U.S. Cl. 91—402 **5 Claims**

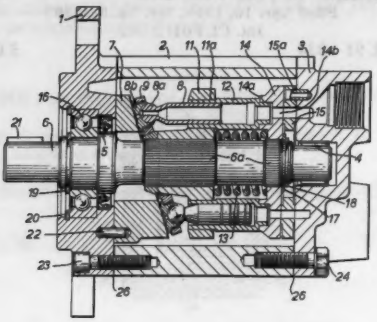


A porous sintered metal diffusion ring is used with one or more drain holes in a hydraulic jack to limit the power stroke of the ram.

3,601,012
FLUID PRESSURE DEVICES
Harold George Oram, 285 Hangleton Road, Hove 4, Sessex, England
Filed May 21, 1969, Ser. No. 826,504
Claims priority, application Great Britain, May 24, 1968, 24,951/68
Int. Cl. F04b *1/02*
U.S. Cl. 91—499 **2 Claims**

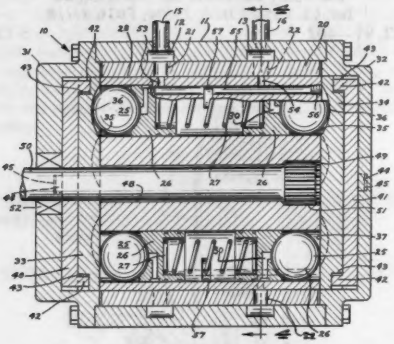
The present invention is concerned with fluid pressure pumps or motors of the type having a rotatable cylinder and a plurality of reciprocal pistons which abut a thrust plate inclined to the axis of rotation of the barrel. In order, among other things, to enhance such abutment a fluid pressure device of the invention is so constructed that the barrel is connected to a port plate by a plurality of sleeves in each of

which sleeves is reciprocally mounted a said piston. Sealing means are provided between each sleeve and the port plate



and in a preferred embodiment the port plate is associated with a stationary valve plate.

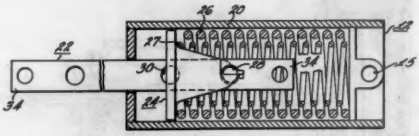
3,601,013
FLUID MOTOR OR PUMP
Victor N. Albertson, 4349 Browndale Ave., Minneapolis, Minn.
Filed Oct. 13, 1969, Ser. No. 865,889
Int. Cl. F04b *1/02*
U.S. Cl. 91—501 **8 Claims**



A fluid motor utilizing axially reciprocating pistons acting in power cylinders against cam type tracks to cause rotation to a rotor as the pistons are moved in and out by alternately subjecting them to pressure or relieving them of pressure. Alternatively, the device may be used as a motor when external power is applied to the carrying member and the cylinders are moved in and out to cause a pumping action. Self-aligning mounting plates for the cam tracks are provided to insure ease of alignment under all operations, without binding or causing excessive wear. Unique porting is also utilized and adjustability in one form of the invention is provided for wear on the exterior of the rotating member.

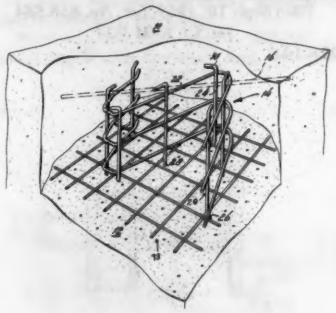
3,601,014
TWO-PIECE PISTON
Calvin E. Redfern, Portland, Oreg., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Oct. 13, 1969, Ser. No. 865,733
Int. Cl. F16j *1/00*
U.S. Cl. 92—59 **7 Claims**

A counterbalancing device for use with an electrical disconnect switch comprises a cylinder which houses a piston, a piston rod and a biasing spring which bears against the piston. The cylinder is a length of standard metal pipe or tubing. The piston rod is a flat bar stock having one or more holes provided along its length. The piston comprises two identical separate cast metal semicircular pieces which have



reentrant projections on one face thereof which engage a hole in the piston rod.

3,601,015
COMPOSITE SPACER SEAT FOR REINFORCING FABRIC AND BARS
Lorin H. Kilstofte, 1840 Bonforte Blvd., Pueblo, Colo.
Filed May 22, 1969, Ser. No. 826,820
Int. Cl. E04c *5/16*
U.S. Cl. 94—8 **4 Claims**



A composite spacer seat for reinforcing elements for paving construction including a base grid and a superposed vertically disposed geometrically configured spacer element connected to the base grid, the composite unit adapted to vertically support and position reinforcements in the construction, the grid and spacer element providing mutual stiffening for transmission of vertical loadings to a unit-supporting surface and the composite having positional stability.

3,601,016
IMPROVED PROCESS FOR LAYING DOWN AS ASPHALT LAYER ONTO PAVEMENT
Jacobus Pieter van der Ploeg, Velp, and Antoni Reinirus Harmsen, Rheden, both of, Netherlands, assignors to Algemene Kustzijde Unie, N.V., Arnhem, Netherlands
Filed May 7, 1969, Ser. No. 822,688
Claims priority, application Netherlands, May 16, 1968, G806900
Int. Cl. E01c *21/00*
U.S. Cl. 94—23 **1 Claim**

An improved process is provided for laying down an asphalt layer onto a cool asphalt pavement layer which comprises placing a preformed solid film on said cool asphalt pavement layer to placing hot asphalt on said cool pavement layer, said preformed solid film becoming adhesive when treated with said hot asphalt to bind said hot asphalt to said cool asphalt pavement layer wherein said film comprises a member selected from the group consisting of montan resin, tall oil resin, rosin, a synthetic polymer having a softening point above 50° C., and bitumen having a softening point above 50° C.

3,601,017

METHOD OF SUPPRESSING INTERFERENCE FRINGES IN PHOTOSENSITIVE MATERIAL

Gotthard Glatzer, Hamburg, and Rolf Linde, Wedel/Holstein, both of, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 21, 1969, Ser. No. 878,756
Claims priority, application Germany, Nov. 23, 1968, P 18 10 627.9
Int. Cl. G03c 1/84
U.S. Cl. 95—1 8 Claims

There is disclosed a method of suppressing unwanted interference fringes which are produced at interfaces of photosensitive information carriers, for example, holograms or interferograms, by reflection of light. The typical carrier of the hologram information consists of a photosensitive layer bounded on one side by air, on the other by a transparent support such as glass.

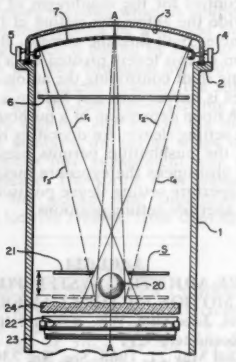
The recording of interference fringes is produced by two coherent beams which are simultaneously incident on the photosensitive layer. Unwanted interference fringes are removed by the application of an immersion layer to the photosensitive surface or to its transparent support, the thickness of which being varied in time during exposure.

3,601,018

METHOD AND APPARATUS FOR EXPOSING CURVED SUBSTRATES

Howard G. Lange, Arlington Heights, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Aug. 26, 1968, Ser. No. 755,156
Int. Cl. G03
U.S. Cl. 95—1 13 Claims



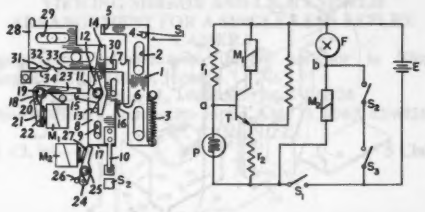
The internal surface of the curved faceplate of a color picture tube is coated with a photosensitive material to be selectively exposed through an aperture mask which has the same general configuration as the coated surface and is positioned in approximately spaced parallel relation thereto. The exposing light source is comprised of a planar source of diffused light disposed across a simulated color axis of the color picture tube, a spherical light stop concentric with that axis and defining the internal diameter of an annulus of light, and a planar light stop having a central aperture concentric with the spherical light stop and defining the external diameter of the annulus of light. The planar light stop is movable between a first position in which one half of the annulus of light is imaged on the peripheral portions of the substrate through the aperture mask and a second position in which the remaining light source is imaged on the same portions of the faceplate. The entire annulus of light is imaged on the central portion of the faceplate in each exposure step. The dimensions and shape imposed on the annulus of light by the dimensioning and configuration of the two light stops compensates the tendency to elliptical distortion introduced to the exposure light projected onto the substrate where that distortion is attributable to the curvature of the substrate and to the fact that the light source is displaced from the center of curvature of the faceplate.

3,601,019

CAMERA MECHANISM FOR AUTOMATIC EXPOSURE BY AMBIENT OR FLASH ILLUMINATION

Kiyoshi Kitai, 13-13, 2-chome, Takasago, Katsushika-ku, Tokyo, Japan

Filed Sept. 24, 1969, Ser. No. 860,517
Claims priority, application Japan, Sept. 24, 1968, 43/68528
Int. Cl. G03b 9/00, 17/18; G01j 1/44
U.S. Cl. 95—10 C 4 Claims



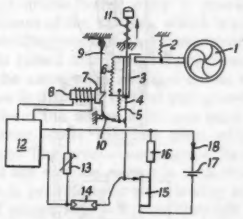
Camera shutter control device having a photoresponsive element detecting brightness of a field of exposure and control elements responsive thereto for programming or setting the camera for automatic control of flash and flashless exposures as a function of the brightness detected. The control device sets the camera for flashless exposures if the brightness is above a predetermined value and for flash exposures if the brightness is below this level. A lock automatically locks the control device to preclude taking of an exposure by flash photography, even if the brightness calls for use of a flash, in the event that the camera flash unit is not operative for whatever reason. A manual release will release this lock so that flashless exposures can be taken as timed exposures.

3,601,020

PHOTOGRAPHIC CAMERA

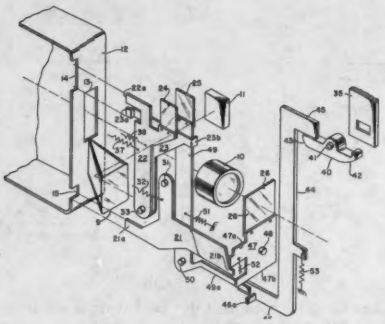
Hubertus Reimann, and Hans-Joachim Daeche, both of Dresden, Germany, assignors to SVEB Pentacon Dresden Kamera-und Kinowerke, Dresden, Germany

Filed Feb. 26, 1968, Ser. No. 708,171
Int. Cl. G03b 7/08, 9/06, 17/18
U.S. Cl. 95—10 C 8 Claims



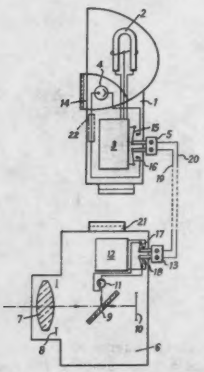
A photographic camera having an automatic exposure control circuit including a photoelectric resistance in which an exposure factor setting control influences the operation of a switching means which operates a magnetic-locking device. The locking device when operated locks the exposure factor-setting control in a position required for accurate exposure. A light indicator includes at least one lamp connected in circuit with a switch device operated by the switch means, a first switch closed by the initial movement of the exposure factor-setting control and a second switch closed by the exposure factor-setting control when it reaches its maximum exposure setting. The switches and switching device are effective to connect a lamp of the light indicator to a source of supply current to indicate a danger of incorrect exposure.

3,601,021
CAMERA EXPOSURE CONTROL
Donald Oscar Easterly, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed July 22, 1968, Ser. No. 746,615
Int. Cl. G03b 7/18, 11/00, 17/26
U.S. Cl. 95—10 C 9 Claims



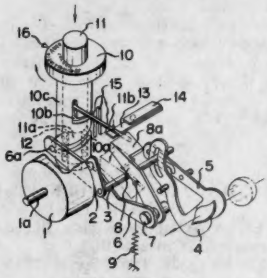
An exposure control system in a camera adapted to receive a film cartridge having tactile indicia representative of film speed and film type, including movable filters for varying the intensity and color balance of light incident on a photocell in the system in response to detected tactile indicia. The system also includes movable filters for varying the intensity and color balance of light transmitted through the objective of the camera in response to the detected film type indicia, and independent control means for removing the color balance filters away from the photocell and the objective.

3,601,022
PHOTOGRAPHIC CAMERA
Kurt Langnau, Dresden, Germany, assignor to VEB Pentacon Dresden Kamera-und Kenowerke, Dresden, Germany
Filed Dec. 5, 1968, Ser. No. 781,481
Int. Cl. G03b 7/08, 15/05
U.S. Cl. 95—10 C 4 Claims



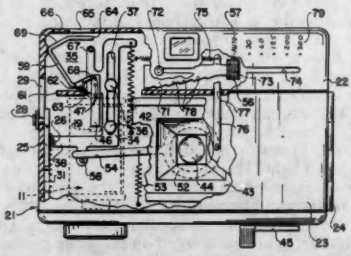
The photographic camera is provided with a flash apparatus which can be mounted on the camera housing or used at a remote position from the camera. The flash apparatus is provided with a photoelectric cell and a flash timing control device. The camera housing contains a photoelectric cell positioned in the optical path through the camera and normally used to control the shutter or diaphragm mechanism. An extension lead is provided for coupling the camera to the flash apparatus so that the photoelectric cell in the camera housing influences the control device of the flash apparatus whilst at the same time rendering the cell of the flash apparatus inoperative.

3,601,023
MANUAL DIAPHRAGM SETTING DEVICE FOR A CAMERA HAVING AUTOMATIC EXPOSURE ADJUSTING DEVICE
Yozo Iida, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed June 12, 1969, Ser. No. 832,623
Claims priority, application Japan, June 26, 1968, 43/54,196
Int. Cl. G03b 7/12, 9/02
U.S. Cl. 95—10 C 9 Claims



A manual control for the diaphragm of a camera is provided to override the automatic setting of the diaphragm by an exposure meter built into the camera. By a scissoring, or pinching action of two levers pivoted on a common shaft, a rocker actuating shaft controlling the automatic setting of the aperture blades is moved into and held in a desired aperture setting position upon depression of a pushbutton and rotation of an aperture setting sleeve. An operating rod movable upon depression of the pushbutton permits biased movement of one lever and also opens the exposure meter circuit. A cam groove in the aperture setting sleeve positions the other lever to the desired aperture setting positions.

3,601,024
EXPOSURE-ADJUSTING SYSTEM FOR STILL OR MOTION-PICTURE CAMERAS
Armin B. Pagel, Janesville, Wis., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 21, 1968, Ser. No. 730,792
Int. Cl. G03b 19/04, 17/20
U.S. Cl. 95—31 FS 2 Claims



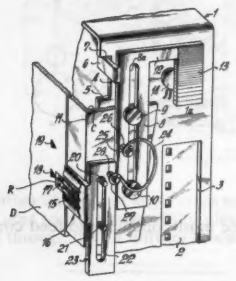
A photographic or cinematographic camera including a mechanism adjustable by coding means on a film container includes means for also adjusting that mechanism manually and a signal device for alerting the operator of the necessity for such manual adjustment whenever the film container loaded into the camera is not coded in a manner compatible with such automatic adjustment.

3,601,025

APPARATUS FOR ADJUSTING EXPOSURE CONTROLS OF PHOTOGRAPHIC CAMERAS

Albert Stieringer, Calmbach, Germany, assignor to Robert Bosch Photokino GmbH, Stuttgart Untertuerkheim, Germany

Filed Mar. 7, 1969, Ser. No. 805,227
Claims priority, application Germany, Mar. 27, 1968, P 12 78 223.9-51
Int. Cl. G03b *09/18, 19/04*
U.S. Cl. 95—31 FS 9 Claims



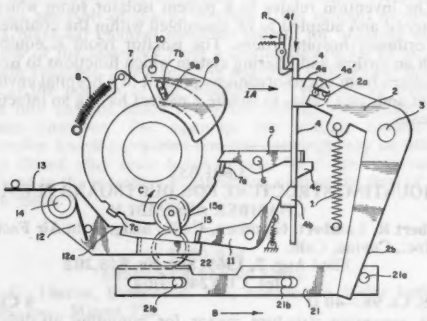
A photographic camera which utilizes magazines provided with markers indicating the sensitivity of film therein. The marker of a magazine which is inserted into the camera is scanned by a scanning member which is coupled to the door-locking device of the camera by a looped snapover spring. When the locking device is moved by hand to an inoperative position in which the user can open the door to gain access to the magazine in a camera housing, the spring biases the scanning member to a predetermined starting position. When the door is closed and the user moves the locking member toward operative position, the spring snaps over and shifts the scanning member into engagement with the marker of the inserted magazine. The spring then biases the scanning member against the marker and simultaneously opposes movement of the locking member from operative position.

3,601,026

SINGLE-LENS REFLEX CAMERA

Helmut Ettischer, Ruit/Krs. Esslingen, Germany, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 15, 1968, Ser. No. 744,968
Int. Cl. G03b *19/12*
U.S. Cl. 95—42 10 Claims



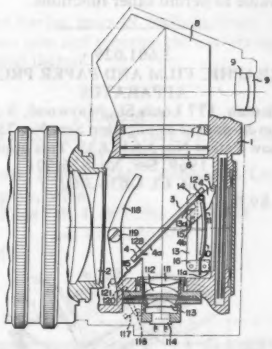
An operating mechanism for a single-lens reflex camera has a slidable control member to which are coupled a shutter setting mechanism, a mirror-actuating mechanism, and a shutter blade retaining lever. Displacement of the control member from an initial position synchronously effects the closing of the shutter and the movement of the mirror to a viewing position prior to exposure, the operation of the shutter to make an exposure, and the activation of the previously deactive retaining lever to prevent rebounding of the shutter blades. The control member is then returnable to its initial position whereby it resets the operating mechanism.

3,601,027

VIEWING MIRROR AND LIGHT SHIELD ARRANGEMENT FOR A SINGLE LENS REFLEX CAMERA

Shigeo Ono, Yokohama-shi, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Aug. 1, 1968, Ser. No. 749,526
Claims priority, application Japan, Aug. 11, 1967, 42/69265
Int. Cl. G03b *19/12*
U.S. Cl. 95—42 5 Claims



An arrangement for the viewing mirror of a single lens reflex camera having a through-the-lens photometric system, is provided for effectively shielding the photocell from light rays entering the objective lens during viewing and exposure operations. A pivotable baffle plate is provided within the mirror compartment of the camera, which is pivoted between the two light shielding positions upon movement of the viewing mirror to its raised and lowered positions by the mirror mechanism of the camera. In addition to the viewing mirror, a concave mirror is disposed behind and pivoted to the viewing mirror to direct the image light rays back to the rear of the viewing mirror where they are then reflected onto the photocell surface. The pivotal connection between the concave mirror and the viewing mirror is such that a large aperture or window is provided for the viewing mirror so that a large bundle of image rays will pass through the semitransparent viewing mirror and be directed onto the surface of the photocell through a relay lens system. The concave mirror effectively seals the aperture or window in the viewing mirror when the mirrors are in their raised positions.

3,601,028

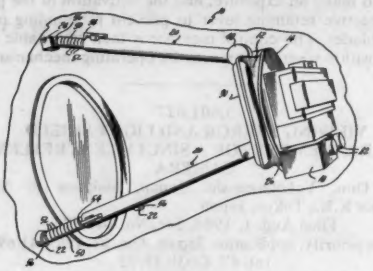
CAMERA TRIPOD

Everett A. Tertocha, Burbank, Calif., The United States of America as represented by the Secretary of the Navy

Filed Feb. 12, 1970, Ser. No. 10,833
Int. Cl. G03b *17/56*
U.S. Cl. 95—86 5 Claims

A stationary baseplate having a large centralized opening therein and supported by three spaced leg members. A camera ring with a camera mounting block positioned on one edge thereof is rotatably mounted on the upper surface of the baseplate and encompasses the centralized opening therein.

This camera mounting device is adapted to position a camera so as to focus on an object through the baseplate opening. It

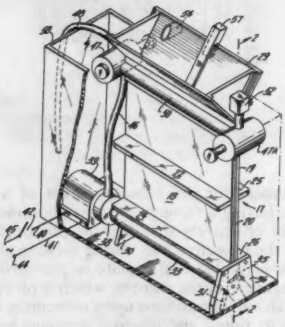


permits accurate photography without any blurring, yet is instantly removable to permit other functions.

3,601,029
PHOTOGRAPHIC FILM AND PAPER PROCESSING APPARATUS

Samuel Needleman, 177 Louis St., Maywood, N.J.

Continuation-in-part of application Ser. No. 751,861, Aug. 12, 1968, now Patent No. 3,538,835. This application May 21, 1969, Ser. No. 826,501
Int. Cl. G03d *3/02*
U.S. Cl. 95—89 R **7 Claims**



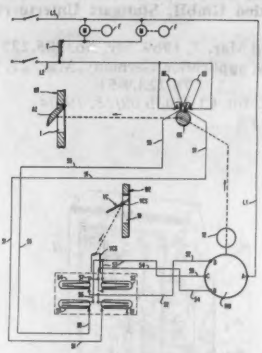
A photographic sheet material processing apparatus. The apparatus comprises an upright vessel of flat configuration having a narrow chamber filled with processing solution in which the material may be inserted. An applicator nozzle, below the level of the solution and in communication with the chamber and operated by a pump, directs a stream of the processing solution in the chamber against the emulsion side of the material, resulting in a laminar flow.

3,601,030
APPARATUS FOR MAINTAINING A DESIRED VACUUM WITHIN AN ENCLOSURE

Omar W. Bryant, R.F.D. #2, Brooks, Maine

Filed Aug. 15, 1969, Ser. No. 850,363
Int. Cl. F24f *13/00*
U.S. Cl. 98—32 **16 Claims**

The vacuum within an enclosure from which air is exhausted for, e.g. ventilation, is maintained at a desired degree by controlling the effective size or area of an air inlet opening in one wall of the enclosure in dependence upon the degree of vacuum in a region adjacent to a different wall of the enclosure, preferably a wall opposite that having the air inlet opening. By way of example, the invention is disclosed as used for maintaining that degree of vacuum in a poultry

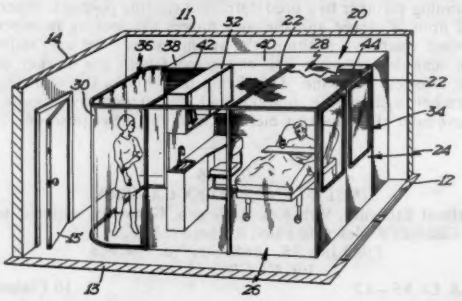


house believed to be most conducive to feed conversion and growth of poultry.

3,601,031
PATIENT ISOLATOR ROOM

Kenneth Abel, New Brighton; Arnold W. Blomquist, St. Paul; Richard K. Olson, Minneapolis, and Keith A. Ufford, Minneapolis, all of, Minn., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Sept. 22, 1969, Ser. No. 859,994
Int. Cl. F24f *13/00*
U.S. Cl. 98—33 **1 Claim**



The invention relates to a patient isolator room which is designed and adapted to be assembled within the confines of an ordinary hospital room. The isolator room is equipped with an airflow and filtering system which functions to isolate a patient from micro-organisms present in a hospital environment and, vice versa, to isolate a patient having an infectious disease.

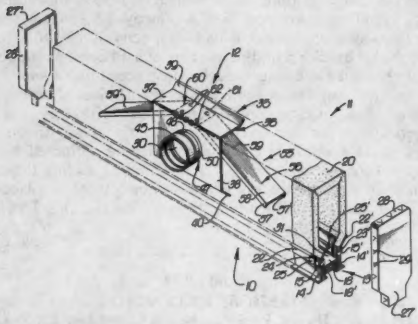
3,601,032
MOUNTING STRUCTURE FOR DUCTBOARD PLENUM CHAMBER ASSEMBLY

Robert R. Lambert, Glendora, Calif., assignor to Air Factors, Inc., Covina, Calif.

Filed Aug. 7, 1969, Ser. No. 848,202
Int. Cl. F24f *13/04*
U.S. Cl. 98—40 D **9 Claims**

A mounting structure means for mounting air-directing means within an air plenum chamber duct assembly of folded ductboard, mounted upon an air diffuser assembly, comprising a support body of preformed sheet metal formed in the general shape of the interior of the duct to be held in fixed relation therein by the interengagement of corresponding

surfaces. The body has flanges which extend under clips or into slitlike openings in the duct to aid in maintaining the body in position. The body mounts an air inlet collar and/or

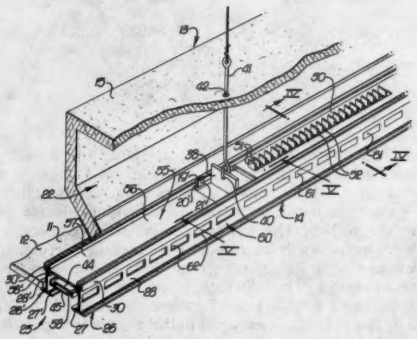


air vanes of either channel or angle cross section to direct the air from the inlet to the outlet of the plenum chamber duct assembly and through the air diffuser assembly.

3,601,033
AIR DIFFUSER ASSEMBLY WITH INTEGRAL AIR RETURN

Robert R. Lambert, Glendora, Calif., assignor to Air Factors, Inc., Corina, Calif.

Filed Sept. 4, 1969, Ser. No. 855,108
Int. Cl. F24f *7/00*
U.S. Cl. 98—40 D **13 Claims**



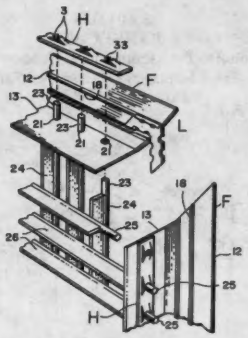
A suspended-ceiling integrated air distribution system air diffuser assembly of spaced inverted T-bar support members has a blank-off channel mounted therein for blanking off a portion of the assembly from a continuous outlet of an air plenum chamber, and a series of openings through the members at the portion of the assembly for venting air from a room into an attic space above the ceiling and outside the plenum chamber. The openings are initially closed by removable knock-out plates and the openings may be selectively closed after once being opened by plates removably mounted to the members to selectively change the flow of air in the room.

3,601,034
DIFFUSER STRUCTURE

John G. Thorne, Hollywood, Fla., assignor to Miller Industries, Inc.,, Miami, Fla.

Filed Nov. 21, 1969, Ser. No. 878,819
Int. Cl. F24f *13/08*
U.S. Cl. 62—110 **1 Claim**

A diffuser having a frame made of L-shaped members corner lock means securing the L-shaped members together, a plurality of louvers extending between the L-shaped members, the louvers having pins mounted at their end portions extending through openings in the frame members and an elongated flat multiblade-holding strip extending along the

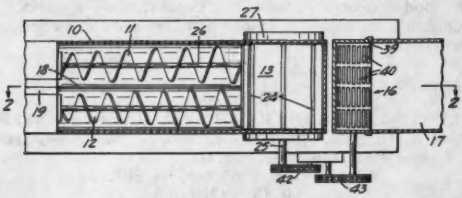


frame members having pairs of resilient finger portions engaging the louver pins and securing the louvers against the inadvertent rotation thereof.

3,601,035
APPARATUS FOR TREATMENT OF PLASTIC MATERIAL

Charles T. Linder, Harris, Minn., assignor to Land O'Lakes, Inc., Minneapolis, Minn.

Filed Feb. 4, 1970, Ser. No. 8,628
Int. Cl. A23d *3/02*
U.S. Cl. 99—244 **4 Claims**



New apparatus is taught for feeding and moving plastic material into and through a conduit. The apparatus has a hopper with an open mouth for receipt of plastic material. The discharge end of the hopper is connected to the entrance of a conduit wherein treatment of the plastic material takes place.

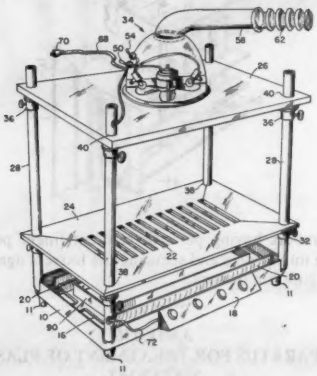
At least one rotatable helical screw is located in the bottom of the hopper. Normally two such screws rotatable in opposite directions are in the bottom, Above the screws, in a spaced relationship from them, is a rotatable drum. This drum is disposed on an axis transverse to the axis of the screws. It has in its periphery a plurality of axially aligned radially extensible and retractable vanes. At least a portion of the periphery of the drum is exposed to the interior of the hopper adjacent the discharge end of it. Radially extended vanes of the drum press plastic material in the hopper toward the helical screws.

A shoeplate member is interposed in the space between the drum and helical screws. The shoeplate has a blunt leading edge substantially parallel to the axis of the drum. This blunt leading edge lies adjacent the periphery of the drum. It is located, in terms of a drum radial angle, between 5° and 30° toward the hopper from a base plane perpendicular to the helical screws within which the drum axis lies.

Means are provided for radially extending the drum vanes outwardly from the drum periphery so as to place them in a position to press plastic toward the helical screws in the portion of drum rotation exposed to the interior of the hopper.

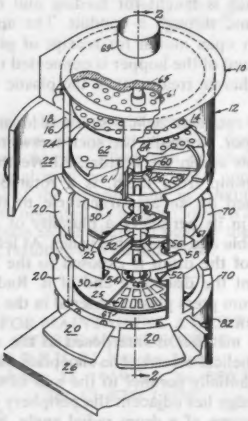
Also, means are provided for retracting the vanes prior to passage of the drum periphery over the blunt leading edge of the shoeplate member.

3,601,036
BARBECUE
Henry Von Kohorn, Pecksland Road, Greenwich, Conn.
Filed Jan. 26, 1970, Ser. No. 5,683
Int. Cl. A47j *37/07*
U.S. Cl. 99—339 **9 Claims**



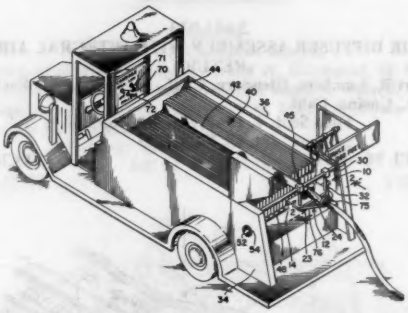
A portable barbecue having a central open grill and a surrounding hot plate or griddle adjustably positioned above a housing accommodating a source of heat. A compartment is formed in the bottom of the housing to accommodate food drippings and partitions surround the compartment to prevent direct radiation from the heating elements toward the food drippings. A fume- and exhaust-removing device is adjustably secured in a spaced warming shelf and conducts the exhaust fumes laterally away from the barbecue.

3,601,037
CONTINUOUSLY OPERATING REVOLVING BROILER
Basil H. Giaretta, Decatur, Ga., assignor to Broil-O-Matic Corporation, Stone Mountain, Ga.
Filed Mar. 20, 1969, Ser. No. 808,834
Int. Cl. A47j *37/06*
U.S. Cl. 99—443 **15 Claims**



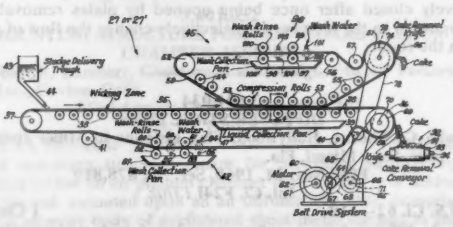
A broiler for restaurants, clubs and the like, for cooking meat on both sides simultaneously on a series of spaced broiler shelves by means of intense infrared reflective heat, therefore virtually without carbon monoxide, whereby steak, chicken, fish and other foods can be cooked within a few minutes, say 3 to 12 minutes depending upon the size and type of food being cooked, and each food being cooked in an individual aluminum pan or casserole. Provision is made for adjusting both the temperature in the cooking zone, and the speed of rotation of the revolving shelves for varying the length of cooking time. A wall-insulated body or cabinet of black steel construction has an array of spaced shelves therein which are power driven respectively about a center shaft. Steel brackets on the interior of said cabinet support in fixed position gas burners, each constructed like a wheel with the burner orifices spaced along the spokes thereof. Segmented fire bricks constructed from refractory ceramic material absorbs the direct flame coming from the burner rings, so that cooking is done by infrared reflected heat at temperatures as high as 800° Fahrenheit. Loading doors for each shelf provide access whereby items may be placed on the shelf and automatically removed with the aid of an ejector bar feeding onto a conveyor.

3,601,038
FIREHOSE RETRACTOR
Robert Henry Hayes, Parkway Beach Court Lot 23, Pomona, N.Y.
Filed Sept. 22, 1969, Ser. No. 859,886
Int. Cl. B30b *3/04*
U.S. Cl. 100—100 **8 Claims**



An automatic retractor for a firehose has laterally juxtaposed axially vertical rollers mounted on a laterally movable carriage. A hose guide ring is mounted on the carriage to guide the hose between the rollers. Individual electric motors drive the rollers. The motors are laterally connected by a spring. One motor is laterally movable on the carriage so that rollers can separate against spring bias when a hose coupling is encountered. The carriage is driven by a motor-driven shaft having a double helical groove. A groove follower carried by the carriage is engaged in the groove to move the carriage laterally in opposite directions.

3,601,039
SLUDGE-DEWATERING APPARATUS
Donald S. Schover, Highland Park, Ill., assignor to General American Transportation Corporation
Filed Nov. 4, 1968, Ser. No. 773,204
Int. Cl. B30b *9/24*
U.S. Cl. 100—118 **12 Claims**



A process and an apparatus, for continuous operation of the process, dewaters sludges and mixtures of sludges. An illustrative sludge is secondary or activated sludge that is ob-

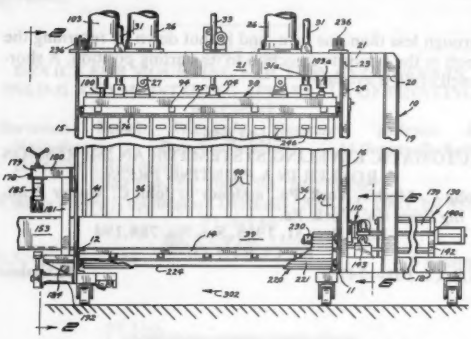
tained after biological flocculation and settling of aqueous liquid that remains after separation of primary sludge in the treatment of domestic sewage solely or admixed with industrial sewage. In the process sludge is fed to the top surface of a suitable, compressible, resilient sheet of porous cellular material, preferably hydrophilic. A downward pressure, preferably through an overlaying sheet of such material, forces liquid at least through the bottom sheet, from which it is separated. When using the second sheet, sludge is trapped between the sheets prior to and during the pressure application. After that separation of liquid, pressure is released. Dewatered sludge cake is removed from the bottom sheet. In the apparatus an endless belt of such cellular material is moved past a sludge feeder and then under a compression device using a moving endless belt o apply the pressure. Advantageously the latter belt is of such material, but it may be a liquid-impervious belt relatively nonadherent with respect to sludge cake. Preferably the first belt is also compressed just prior to sludge addition.

3,601,040

COMPRESSION PACKER APPARATUS HAVING A DOOR

Leslie A. Steinberg, Minneapolis; Jack D. Helm, Maple Plains, and Thomas F. Shovlin, Minneapolis, all of, Minn., assignors to Bemis Company, Inc., Minneapolis, Minn.

Filed Mar. 19, 1970, Ser. No. 20,990
Int. Cl. B30b *1/32*
U.S. Cl. 100—179 **39 Claims**



Compression packing apparatus having a bottom press plate, sidewalls, a transversely movable backwall assembly for varying the width of the loading chamber, a vertical ram assembly, a horizontal ram assembly, a spout assembly and drive mechanism for translating the backwall assembly for selectively varying the width of the loading chamber. Each of the vertical ram, horizontal ram and spout assemblies have extensible portions connected to the backwall assembly to be moved thereby between extended and retracted positions. Further, there is provided a horizontally slatted-type door for closing the loading opening that may be moved to a closed position by selected increments for progressively more nearly closing the loading opening, the door being movable vertically upwardly toward a closing position. Additionally, there is provided a precompression assembly.

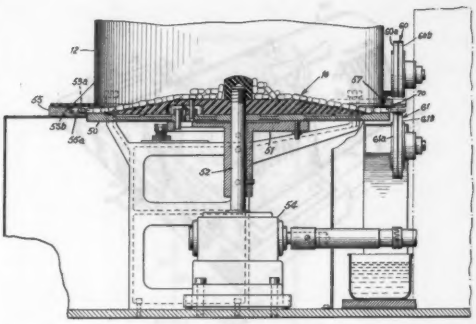
3,601,041

APPARATUS FOR FEEDING AND PRINTING TABLETS AND CAPSULES

Andrew G. Perra, Jr., North Swanzey, and Frank W. Sawtelle, Keene, both of, N.H., assignors to Markem Corporation, Keene, N.H.

Filed Apr. 22, 1969, Ser. No. 818,339
Int. Cl. B41f *17/36*
U.S. Cl. 101—37 **11 Claims**

Apparatus for orienting and selectively printing capsules or tablets on one or two sides at rates of 10,000 or more units per minute, comprised of a hopper for carrying a bulk supply of capsules which is set over a rotating disc having slotted radial paths. As the capsules fall on to this rotating disc, they are centrifugally thrown toward the outer periphery along these slotted paths. A pair of opposed printing members are positioned over the peripheral edge portion of the rotating



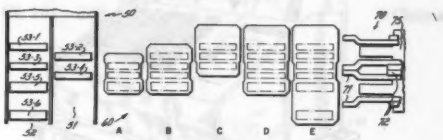
disc so that the capsules are passed between these printing members and then discharged into a hopper by an air jet.

3,601,042

METHOD AND APPARATUS FOR PRINTING TAGS

Paul H. Hamisch, Sr., Dayton, Ohio, assignor to The Monarch Marking System Company, Dayton, Ohio

Filed July 6, 1970, Ser. No. 52,651
Int. Cl. B411 *15/14*
U.S. Cl. 101—69 **41 Claims**



A method and apparatus for printing closely spaced lines of characters on a series of tag parts, with a minimum of printing strokes and without the printing of extra tag parts, using a two section printhead having a plurality of band-set lines staggered between the two sections. Each tag part is fed part each printhead section and is partially printed by each section to be completed in two printing strokes. Adjacent tag parts are printed simultaneously by different sections of the printhead. One print stroke more than the total number of tag parts is employed. The feeding of blanks is inhibited during the last feed cycle. Counters control the printing of a selected number of single or multiple part tags through solid-state circuitry, and control the printing, feeding and cutting of tags, and the starting and stopping of the machine which prints them. The controls employ a combination of electrical and mechanical signals for driving, synchronizing, conditioning and enabling the various operations. A portion of the guideway is depressible to expose a cutting edge of the platen, a two section printhead structure with telescoping dials, and selective tag guides which retract into the guideway for accommodating various tag sizes are also provided.

3,601,043

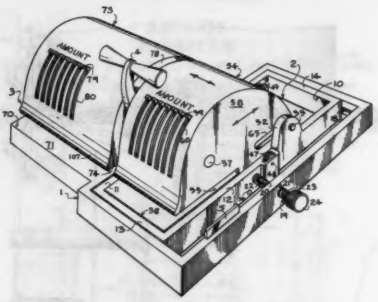
ADJUSTABLE CHECK WRITER WITH PLURAL PRINTING STATION

Vernon W. Cook, Jr., P.O. Box 266, Pearson, Ga.

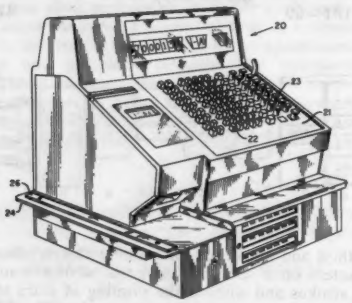
Filed June 2, 1969, Ser. No. 829,517
Int. Cl. B411 *19/04;* **B41f** *1/04*
U.S. Cl. 101—90 **8 Claims**

This invention relates to a check-writing machine provided with two print stations supported for both lateral and fore and aft adjustment relative to each other. One of the print stations is provided with a signature block and each of the print stations include a series of print elements selectively

settable relative to a print line. A platen mechanism is provided on the check writing machine for effecting a simultaneous print out of information set in the print elements and contained in the signature block.



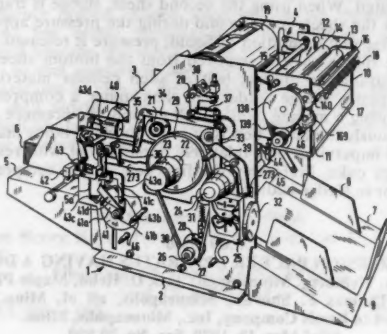
3,601,044
PRINTER MECHANISM
Anthony W. Nosil, Jr., Kettering, Ohio, assignor to The National Cash Register Company, Dayton, Ohio
Filed June 30, 1969, Ser. No. 837,689
Int. Cl. B41j *19/00*
U.S. Cl. 101—93 MN **9 Claims**



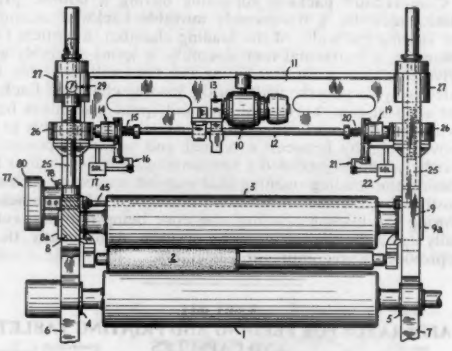
A cash register feed mechanism for positioning a record form during a printing operation in which the preceding printed line and the next print line to be printed on are visible to the operator at the end of the printing operation. A drive member operating a feed mechanism conditions a stop member when operating the feed mechanism during a first feed operation to limit the movement of the drive member during a second feed operation whereby the next print line of the record form is positioned for a subsequent printing operation.

3,601,045
OPERATING CONTROLS FOR AN OFFSET PRINTING PRESS
Heinz Joachim Schinke, Unterkirnach, and Hermann Raible, St. Georgen, both of, Germany, assignors to Math. Bauerle GmbH, St. Georgen, Germany
Continuation-in-part of application Ser. No. 705,656, Feb. 15, 1968, now abandoned , Continuation-in-part of application Ser. No. 707,624, Feb. 23, 1968, Continuation-in-part of application Ser. No. 716,141, Mar. 26, 1968, now Patent No. 3,517,613, Continuation-in-part of application Ser. No. 721,861, Apr. 16, 1968, now Patent No. 3,552,312. This application Dec. 26, 1968, Ser. No. 786,986
Int. Cl. B41f *7/06, 7/40, 31/30*
U.S. Cl. 101—144 **25 Claims**

All normal operating controls of a small offset printing press or office duplicator are combined in a single control shaft connected by cams and cam follower trains to the several operating elements of the press and carrying a single control knob in such a manner that the machine is started and operated by turning the knob stepwise in one direction through less than one turn, and is shut down by returning the knob in the opposite direction to its starting position. A shortened cycle is available.



3,601,046
AUTOMATIC LEVELING SYSTEM FOR AN IMPRESSION ROLLER IN A PRINTING PRESS
John C. Motter, York, Pa., assignor to John C. Motter Printing Press Co., York, Pa.
Filed Dec. 31, 1968, Ser. No. 788,194
Int. Cl. B41f *13/40*
U.S. Cl. 101—247 **10 Claims**



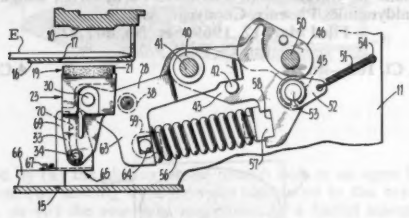
A system for automatically maintaining a desired relation between the axes of a printing cylinder and an impression roller movable toward and away from the printing cylinder by sensing the relative positions of the ends of the impression roller, and adjusting the relative displacement of the impression roller ends to attain the desired axial relationship between the printing cylinder and the impression roller.

3,601,047

RECIPROCATING PLATEN PRINTER WITH SPRING BIASED PLATEN CONTROL ARMS

Helmut K. Waibel, San Lorenzo, Calif., assignor to The Singer Company

Filed June 9, 1969, Ser. No. 831,327
Int. Cl. B41f *1/06, 1/54*
U.S. Cl. 101—316 1 Claim



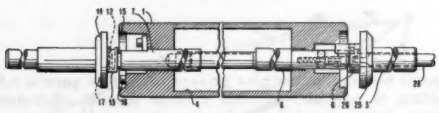
An adjustable guide member for maintaining a parallel relationship between the planar surface of a platen and the printing surface of an indicium, or printing, plate. The platen is normally spaced from, and is rockable in a vertical path toward, the printing plate to press mail matter to be printed, such as envelopes, against the printing plate to receive an impression.

3,601,048

DEVICE FOR MOUNTING FRICTION CYLINDERS IN INKING AND MOISTENING APPARATUS OF PRINTING MACHINES

Hermann Beisel, Wiesloch, Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany

Filed Nov. 25, 1968, Ser. No. 778,657
Claims priority, application Germany, Nov. 24, 1967, 64 559
V116/15d
Int. Cl. F16c *35/08*
U.S. Cl. 101—348 5 Claims



Device for removably mounting a hollow friction cylinder in inking and moistening apparatus of a printing machine includes clamping means comprising a clamping screw and nut threaded thereon located within the friction cylinder, respectively at opposite ends thereof, and being mutually threadingly rotatable for varying the length of the clamping means, bearing pins for the friction cylinder having a receiving shell wherein respective end portions of the screw and nut are received form lockingly in axial direction and removably in radial direction thereof, each bearing pin having a flange substantially conforming to a guide bore formed in the friction cylinder, the clamping means being actuable externally to the friction cylinder to force the flanges into the respective guide bores.

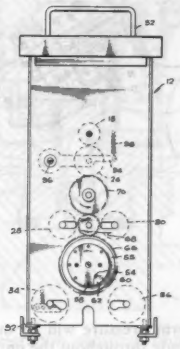
3,601,049

INK TRAIN CARTRIDGE

Wesley D. Hamilton, Englewood Cliffs, N.J., assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed May 21, 1969, Ser. No. 826,623
Int. Cl. B41f *31/34, 31/02*
U.S. Cl. 101—350 3 Claims

A cartridge for use in a printing press which allows the inking rollers to be cleaned or replaced without disassembling the press. The cartridge comprises an ink fountain and a train of rollers ending in a pair of form rollers, all of which are contained in a cartridge housing that can be inserted into a printing press and removed therefrom.

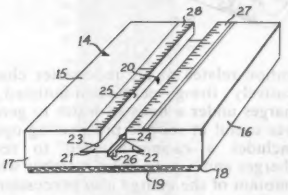


3,601,050

CUSHIONED-BASE RUBBER STAMP MOUNTS

Miguel A. Puerta, 1164 Alta Ave. Apt. 13, NE, Atlanta, Ga.

Filed July 11, 1969, Ser. No. 848,385
Int. Cl. B41k *1/02*
U.S. Cl. 101—368 4 Claims



A hand stamp for applying print to a flat surface which includes a base having a bottom surface with a yielding surface printing plate secured thereto. The upper surface of the base defines a rectilinear slot and a scale is imposed on the upper surface adjacent the slot. A handle is inserted in the slot at a position centered between the ends of the slot as determined by the scale.

3,601,051

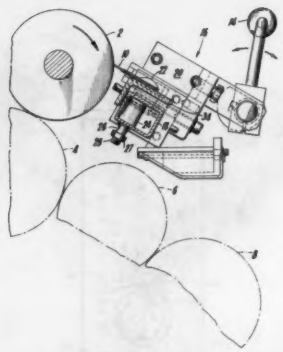
FLEXIBLE BLADE CONSTRUCTION FOR A ROLLER-CLEANING DEVICE

Harold W. Gegenheimer, Darien, and Karlheinz Arnolds, Stamford, both of, Conn., assignors to Baldwin-Gegenheimer Corporation, Stamford, Conn.

Filed July 2, 1969, Ser. No. 838,559
Int. Cl. B41f *35/04*
U.S. Cl. 101—425 2 Claims

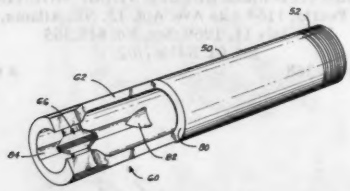
The invention relates to a printing device having a roller-cleaning apparatus which includes a flexible blade which is maintained in line contact with a roller with substantially uniform pressure to remove caked-in dirt from the roller. The flexible blade is supported by a plurality of adjustable

engaging means which can transversely bow the blade in any desired amount, depending on the size of the press involved,



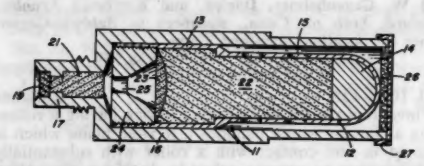
to insure that uniform pressure will be maintained between the roller and the blade throughout the entire line of contact.

3,601,052
UNDERWATER CHARGE LAUNCHER
John C. Mollere, San Marino, Calif., assignor to Western Geophysical Company of America, Houston, Tex.
Filed June 12, 1969, Ser. No. 832,727
Int. Cl. F42d *3/06*
U.S. Cl. 102—22 **4 Claims**



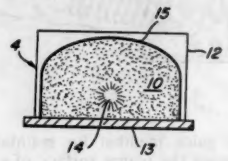
This invention relates to an underwater charge launcher for consecutively firing percussion-initiated, explosively operated charges under a body of water to generate therein seismic waves useful in seismic prospecting operations. The launcher includes a casing adapted to receive water-propelled charges and a percussion member which while arresting the motion of the charge also percussion initiates the blasting cap of the charge. A lateral window for ejecting the percussion-initiated charges from the casing, and at least one cavity in the casing opposite the window to develop a relatively high-pressure zone for facilitating the ejection of the charge through the window.

3,601,053
SIGNAL PROJECTILE CONFIGURED FOR IMPROVED PENETRABILITY OF FOLIAGE
Kenneth J. Grall, and Ambrose A. Fulkerson, both of Evansville, Ind., assignor to the United States of America as represented by the Secretary of the Navy
Filed Oct. 27, 1969, Ser. No. 869,528
Int. Cl. F42b *13/44*
U.S. Cl. 102—32 **4 Claims**



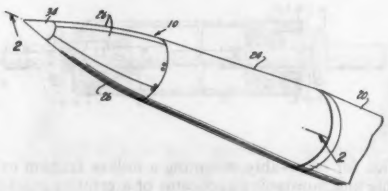
A signal projectile having an outer container adaptable for mounting to a launching projector and an inner container having a quantity of pyrotechnic material therein for generating a smoke trail when the inner container is launched from the outer container. The inner container has a stepped configuration and a weighted forward end to permit passage of the inner container through jungle canopy.

3,601,054
METHOD AND APPARATUS FOR ELECTROMAGNETICALLY INITIATING ORDNANCE
William O. Christianson, Litchfield Park, Ariz., assignor to Unidynamics/Phoenix, Goodyear, Ariz.
Filed Mar. 17, 1969, Ser. No. 807,727
Int. Cl. F42b *9/08*
U.S. Cl. 102—46 **4 Claims**



In order to obviate the necessity for using firing pins or electrical probes for initiating ammunition, a cluster of conductors are enclosed within a mass of pyroignition material, and means are provided to subject the cluster of conductors to control electromagnetic radiation such that they are heated into an incandescent state to ignite the pyroignition material.

3,601,055
PROTECTIVE NOSE COVER AND IN-FLIGHT REMOVAL MEANS
Sydney R. Crockett, Oxnard, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed Feb. 25, 1969, Ser. No. 802,075
Int. Cl. F42b *15/08*
U.S. Cl. 102—49.4 **5 Claims**

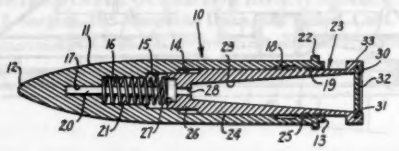


An expendable nose shield for use in a multistage missile arrangement wherein a second stage is encapsulated within a first stage and is launched from such location upon burnout of the first stage. It comprises an ogive-shaped shell formed of four petallike quadrants with their bases secured to the leading edge of the first stage and their tips held together by a common clip. Forward movement of the second stage releases the clip and the quadrants separate and break off in the slipstream. The shield may also house a stabilizing fin assembly including a sleeve through which the second stage passes and which becomes attached to the slightly enlarged tail portion of the second stage when the latter emerges.

3,601,056
ROCKET PROJECTILE CARTRIDGE
Morris Roger Nicholson, 955 S. Christine Road, Wichita, Kans.
Filed Oct. 3, 1969, Ser. No. 863,452
Int. Cl. F42b *13/28*
U.S. Cl. 102—49.7 **5 Claims**

A rocket projectile cartridge in which an ejector groove is provided on the rear of the cartridge for ejecting a faulty

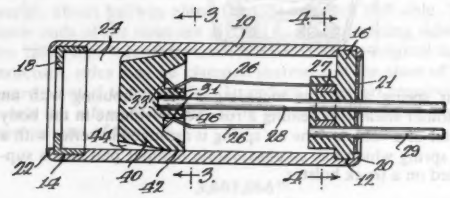
round. All of the propellant, the firing pin and primer are contained within the cartridge and move outwardly therewith as the cartridge is fired. The firing of the cartridge is accomplished by (a) the closing of the breach bolt in an open bolt weapon, (b) striking by a hammer contained in the breach block, or (c) the rearward movement of a barrel assembly against a stationary or semifloating breach block.



3,601,057
ARMING SWITCH

Ralph S. Kline, Janesville, Wis., assignor to Gibbs Manufacturing and Research Corporation, Janesville, Wis.

Filed Feb. 11, 1969, Ser. No. 798,390
Int. Cl. F42c *19/06, 11/00;* **F24c** *5/00*
U.S. Cl. 102—70.2 R **5 Claims**



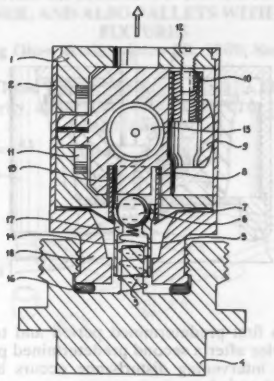
An arming switch for making an electrical circuit through connections thereto upon a sudden reduction in ambient pneumatic pressure. A pair of parallel connected contact blades spring loaded toward a stationary contact are held separated therefrom by a skirted piston in a cylinder. The cylinder behind the piston normally fill to ambient pressure around the skirt. Whenever there is a sudden reduction in ambient pressure, the pressure differential across the piston moves the piston away from the blades and permits the blades to close against the stationary contact. Inherent leakage around the piston prevents gradual ambient pressure changes from producing arming action.

3,601,058
FUSE WITH PRIMER SAFETY COMPRISING A ROTOR

Anders B. Arnell, Eskilstuna, and Rolf W. Grahn, Torshalla, both of, Sweden, assignors to Forsvarets Fabriksverk, a Swedish Government Dept. under Swedish Ministry of Defense, Eskilstuna, Sweden

Filed Apr. 29, 1969, Ser. No. 820,139
Int. Cl. F42c *15/18, 15/24, 11/06*
U.S. Cl. 102—70.2 R **3 Claims**

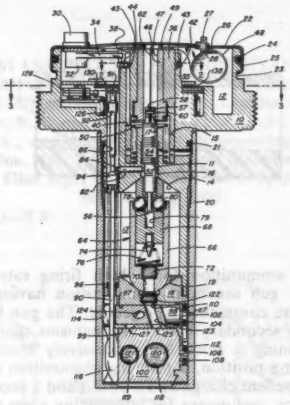
A fuse safety device for a nonspinning shell containing a primer such as a squib, located in a spring-loaded rotor that is turned from a safety position to an armed position after the shell has left the barrel, the fuse having a safety means comprising a short tube partly inserted in the rotor, said tube being able, upon acceleration, to pierce a central hole in a thin resilient disc fitted to the bottom of the rotor casing. The squib is electrically connected to the base of the fuse by means of a spring-loaded ball. Another safety means comprises a gross acceleration sensitive friction-operated tube contained in the rotor.



3,601,059
SELF-DUDDING ORDNANCE FUZE

George S. Briggs, Adelphi, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Sept. 17, 1969, Ser. No. 858,670
Int. Cl. F42c *1/00, 15/12*
U.S. Cl. 102—74 **15 Claims**



An ordnance fuze having a selector rotor and an arming rotor initially held in an unarmed position by a rod which can be released by the rotation of a wind vane to move clear of the arming rotor and thus free the arming rotor to rotate to an armed position. A timer revolves a plate to block the movement of the rod after a predetermined time lapse if the vane has not already released it, thus preventing the arming of the fuze. An externally operated control limits the movement of the rod to either permit or prevent rotation of the selector rotor to direct the blast of the primer to either an instantaneous detonator or a delay detonator.

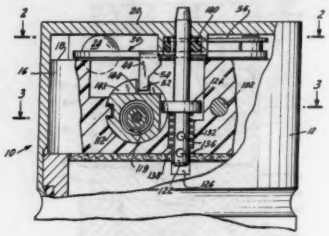
3,601,060
ANTIDISTURBANCE DEVICE

Torbjorn Thuen, Roseland, N.J., assignor to P.A.O.D. Inc., Fairfield, N.J.

Filed Apr. 29, 1969, Ser. No. 820,105
Int. Cl. F42c *7/00, 15/24*
U.S. Cl. 102—76 P **12 Claims**

A disturbance-sensitive device adapted to be actuated when the device is subjected to a shock above a predeter-

mined threshold limit or when the angle which the device makes with the ground is varied. The device is provided with a timer adapted to initially arm the device for disturbance actuation after a first predetermined period and to thereafter trigger the device after a second predetermined period in the event that no intervening disturbance occurs between the first and second periods.

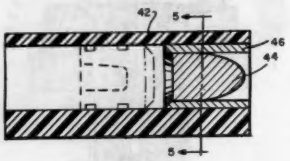


3,601,061

AMMUNITION FOR HIGH FIRING RATE, LIGHT GAS HYPERVELOCITY GUN

David Dardick, Palos Verdes Estates, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Division of Ser. No. 664,882, Aug. 31, 1967, Pat. No. 3,496,827
Filed Jan. 30, 1969, Ser. No. 795,212
Int. Cl. F42b *9/30*
U.S. Cl. 102—92.1 **2 Claims**



Secondary ammunition for a high firing rate, light gas hypervelocity gun secondary ammunition having a hollow open inlet case containing a projectile. The gun has the primary and the secondary breech mechanisms spaced along a barrel containing a bore for successively transporting in unison to firing position, a primary ammunition round containing a propellent charge and a piston and a secondary ammunition piece, and means for introducing a gas under pressure into the bore between the breech mechanisms, whereby when the primary round is fired its piston is propelled forwardly through the bore to a terminal position within the secondary breech mechanism to compress the gas between the piston and the projectile of the secondary ammunition and thereby effect expulsion of the projectile from the gun at a hypervelocity. The piston and secondary ammunition core are from the gun during subsequent operation of the breech mechanisms to transport the next primary and secondary ammunition to firing position.

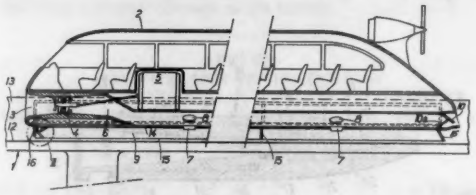
3,601,062

GROUND EFFECT MACHINES

Jean Henri Bertin, Neuilly-sur-Seine; Paul Francois Guienne, Paris, and Francois Gilbert Paris, Bayonne, all of, France, assignors to Bertin & Cie, Plaisir, France

Filed Oct. 8, 1969, Ser. No. 864,685
Claims priority, application France, Oct. 10, 1968, 169,477
Int. Cl. B61b *13/08*
U.S. Cl. 104—23 FS **10 Claims**

A ground effect machine having a control system by means of which, when machine speed increases, the gap or daylight clearance at the front of the machine between the structure thereof and the surface along which the machine travels, is progressively reduced, so as to reduce the direct ramming influence feed to the cushions by the dynamic pressure set up by the speed of the machine.

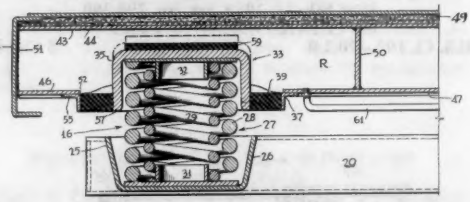


3,601,063

COMPOUND RAILWAY SPRING ASSEMBLY

Albert G. Dean, Narberth, Pa., assignor to The Budd Company, Philadelphia, Pa.

Filed June 23, 1969, Ser. No. 835,698
Int. Cl. B61f *1/14, 5/04, 5/10*
U.S. Cl. 105—199 R **3 Claims**



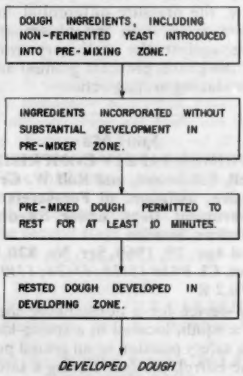
Air spring apparatus including a metal housing with an elastomer shear ring sealing a reserve air volume in the body bolster of a vehicle. The air spring is arranged in series with a coil spring which has an elastomeric bumper pad and is supported on a truck bolster.

3,601,064

METHOD OF PREPARING DOUGH

Simon S. Jackel, Westport, Conn.; Kenneth R. Rand, Short Hills, N.J.; Fred T. Letterman, Allendale, N.J., and Volodymyr R. Diachuk, Rutherford, N.J., assignors to Baker Research Development Services Inc., New York, N.Y.

Filed May 15, 1969, Ser. No. 824,884
Int. Cl. A21d *8/02*
U.S. Cl. 107—54 B **9 Claims**


DOUGH INGREDIENTS, INCLUDING NON-FERMENTED YEAST INTRODUCED INTO PRE-MIXING ZONE.
INGREDIENTS INCORPORATED WITHOUT SUBSTANTIAL DEVELOPMENT IN PRE-MIXER ZONE.
PRE-MIXED DOUGH PERMITTED TO REST FOR AT LEAST 10 MINUTES.
RESTED DOUGH DEVELOPED IN DEVELOPING ZONE.
DEVELOPED DOUGH

A continuous method of preparing dough including a premixing step and a development step. Prior to develop-

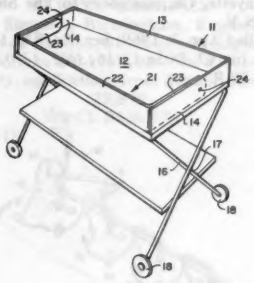
ment, the premixed dough is rested for at least 10 minutes. The requirement for setting the broth can be entirely eliminated if a relatively long rest period is employed.

3,601,065

RETRACTABLE GUARD FOR INFANT'S TABLE

Mary J. Sargent, 205 Margarita Drive, San Rafael, Calif.

Filed Mar. 23, 1970, Ser. No. 21,920
Int. Cl. 47b *17/00*
U.S. Cl. 108—27 **8 Claims**



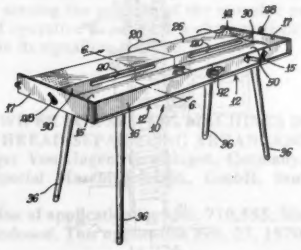
To prevent infants from falling off the front edge of a dressing table a U-shaped guard is provided. The base of the U extends along the front edge and the sides extend rearwardly about halfway along the side edges of the table. The inner ends of the sides are pivoted to the upstanding sides of the table top. Where no sides are provided as original table structure, sides may be clamped thereto and the sides of the guard pivoted to such sides. To reduce the effort required to reach the infant or lift him from the table, the guard pivots upward, out of the way.

3,601,066

GAME BOARD

Frank Duncan Daniel, 5129 Harper Ave., Chicago, Ill.

Filed May 21, 1969, Ser. No. 826,455
Int. Cl. A47b *3/00*
U.S. Cl. 108—34 **12 Claims**



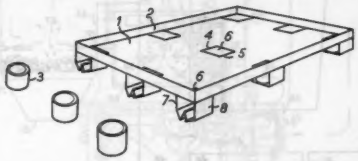
A collapsible game board having two sections, each section having an open end adapted to be abutted against the corresponding open end of the other section to define a playing area having an upper surface and a lower surface. One of the sections when inverted can be superimposed on the other section with the upper surface of one section disposed adjacent to the lower surface of the other section, each section being formed in a complementary fashion to prevent relative sidewise, perpendicular and endwise movement of the two superimposed sections.

3,601,067

DEVICE FOR FIXING PALLET LEGS TO A PALLET PLATFORM OR DIRECT TO THE BOTTOM OF A CONTAINER, AND ALSO PALLETS WITH SUCH LEG FIXTURES

Torger Rovig Olsen, Radhusgaten 2B, 3200, Sandefjord, Norway

Filed Apr. 3, 1969, Ser. No. 813,237
Claims priority, application Norway, Apr. 16, 1968, 1429/68
Int. Cl. B65d *19/18*
U.S. Cl. 108—51 **16 Claims**



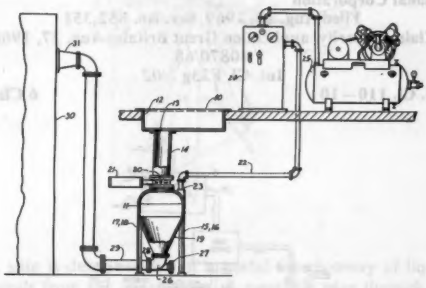
The invention relates to pallets and containers, preferably of the disposable type. A device for fixing pallet legs to a pallet platform or direct to the bottom of a container is provided in the form of a strip member, the center part of which is on the upper side of the leg and the ends of which are bent down along the leg, in under the leg and up into the leg. The center part of the strip member may be nailed, tacked or stapled to the platform or container bottom or may be arranged on the upper side of the platform or container bottom, the two ends being threaded through slots in the platform or container bottom.

3,601,068

SYSTEM AND PROCESS FOR CONVEYANCE AND INCINERATION OF WASTE MATERIAL

Charles P. Ciaffone, Sturbridge, Mass.; Charles A. Richmond, Montclair, N.J., and Arthur W. Grahame, Jr., West Hempstead, N.Y., assignors to Nichols Engineering & Research Corporation, New York, N.Y., by said Richmond

Filed Sept. 17, 1969, Ser. No. 858,632
Int. Cl. F23g *5/00*
U.S. Cl. 110—8 R **4 Claims**

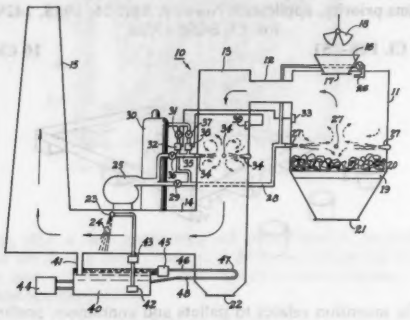


A process for conveying and incinerating waste material which comprises subjecting the waste to pneumatic pressure so as to convey it through a connecting pipe to an incinerator and an apparatus directed thereto which comprises means for receiving the waste; a pneumatic ejector situated beneath the receiving means, which is a generally cylindrical vessel terminating in a conical bottom section, having an inlet valve suitable for closing off the inlet to make the vessel airtight, and an air inlet for admitting compressed air to the ejector, the air inlet being connected by a pressure air line to a control panel which, in turn, is connected to a source of compressed air; and a discharge pipe leading from the bottom of the ejector to an incinerator and connected thereto by means of a flared adapter.

3,601,069
INCINERATOR

Thomas P. Mancuso, 130 Ackerman St., Rochester, N.Y.

Filed Sept. 25, 1969, Ser. No. 861,052
Int. Cl. F23g 5/12
U.S. Cl. 110—8 C 8 Claims

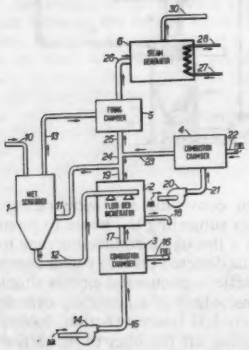


An incinerator having a primary furnace, a combustion chamber and a stack is improved by having a blower force air through nozzles arranged in the primary furnace and the combustion chamber so that blasts of air from the nozzles extend to the central region of the primary furnace and collide in the combustion chamber to produce a turbulent region substantially slowing the passage of gasses through the combustion chamber. Also, a supply of fuel is adjustably mixed with the forced air in proportions up to the optimum fuel-air ratio for complete combustion of the fuel to make the air blasts from the nozzles into flame blasts for maintaining desired temperatures in the primary furnace and the combustion chamber. The amount of fuel mixed with the forced air is preferably regulated automatically, and the turbulence form the blasts in the combustion chamber facilitates complete combustion and acts as a fly ash precipitator.

3,601,070
TOTAL INCINERATION PROCESS

John Lambiris, New York, N.Y., assignor to Richard George Reimus, Warren, Pa. and Struthers Scientific and International Corporation

Filed Aug. 22, 1969, Ser. No. 852,351
Claims priority, application Great Britain, Aug. 27, 1968, 40870/68
Int. Cl. F23g 5/02
U.S. Cl. 110—10 6 Claims

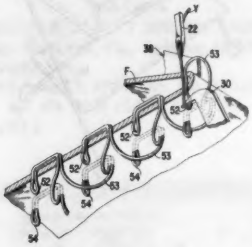


Waste water is cycled through a wet scrubber and a fluid bed incinerator fed by a first combustion chamber so that the waste water is concentrated in the wet scrubber as it removes solid particles from gases introduced from the fluid bed incinerator, the fluid bed incinerator removing inorganic solids at relatively low temperatures, gaseous effluent from the wet scrubber and hot gases from a second combustion chamber passing to a second firing chamber to oxidize organic matter entrained in the gaseous effluent at a higher temperature, the gaseous effluent passing through a steam boiler for heat recovery.

3,601,071
MULTIPLE-PILE-TUFTING MACHINES, METHOD AND PRODUCT

Charles William Watkins, Hixson, Tenn., and William M. Gaines, Lafayette, Ga., assignors to The Singer Company, New York, N.Y.

Filed Apr. 3, 1969, Ser. No. 813,132
Int. Cl. D05c 15/16, 3/02, 17/02
U.S. Cl. 112—79 R 23 Claims

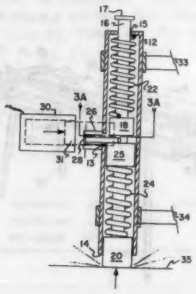


This disclosure relates to tufting apparatus of the type for producing pile fabrics such as carpets and the like. The disclosure further teaches a novel use of a novel apparatus for producing a pile fabric wherein efficient use is made of the yarn so that maximum usage of the yarn is utilized for the pile surface and a minimum for the backstitch.

3,601,072
CONTROLLED FORCE APPLICATOR

Donald M. Husted, Wilton, Conn., assignor to Ivanhoe Research Corporation, New York, N.Y.

Filed Mar. 25, 1970, Ser. No. 22,624
Int. Cl. D05b 21/00
U.S. Cl. 112—121.15 7 Claims



A device for applying a controlled or predetermined force at a point of contact on a surface, comprising a contact member or shoe carried on the end of a shaft, a housing member adapted to carry the shaft allowing the shaft to move along the axis of the housing, a pair of springs, in series arrangement, positioned about the shaft each adapted to act upon the shoe, (and the shaft) with respect to the housing, a spring activating means or spring selector adapted to restrict movement of one of the springs, when in closed position and

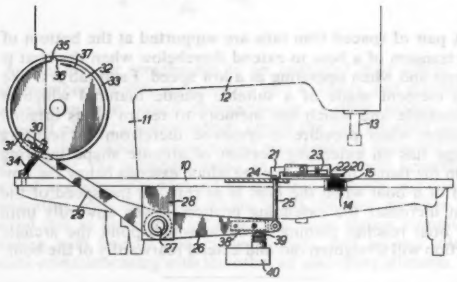
to allow free movement of such spring when in an open position, a carrier means for repeatedly moving the housing toward a workpiece with the shoe contacting the surface of the workpiece and, after contact is made, to cause the housing to further descend toward the workpiece and a means for actuating the spring selector or spring-activating means. By use of the described apparatus the dead pressure, which may be of unlimited force, exerted by the carrier means to bring the applicator into contact with the surface of a workpiece, is converted to a firm, resilient force of predetermined pressure, the magnitude of such pressure being selectable.

3,601,073

SEWING MACHINES

William Leslie Simpson, Birmingham, England, assignor to Newey Goodman Limited, Birmingham, England

Filed June 20, 1969, Ser. No. 835,148
Claims priority, application Great Britain, June 22, 1968, 29,879
Int. Cl. B65h *63/02*
U.S. Cl. 112—218 **5 Claims**



A lockstitch sewing machine including a bobbin holder capable of receiving a bobbin with a part movable to a signalling position when there is little or no thread on the bobbin but held in a normal position by the thread when there is more than a little thread on the bobbin, the machine being characterized in that it is provided with sensing means capable of sensing the position of the movable part of such a bobbin and operative to produce a characteristic signal when the part is in its signalling position.

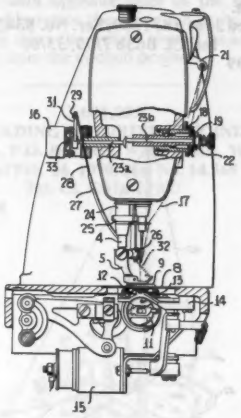
3,601,074

THREAD WIPER FOR SEWING MACHINES INCLUDING A THREAD-SEPARATING ARRANGEMENT

Wolf-Rudiger Von Hagen, Grotzingen, Germany, assignor to Union Special Maschinenfabrik, GmbH, Stuttgart, Germany

Continuation of application Ser. No. 710,555, Mar. 5, 1968, now abandoned. This application Feb. 27, 1970, Ser. No. 14,775
Int. Cl. D05b *65/02*
U.S. Cl. 112—252 **15 Claims**

There is disclosed a thread wiper or deflector means for sewing machines having therein a thread-severing device and a thread tensioning and releasing means, the thread wiper means being mounted for projection and retraction and coupled with a rotary solenoid effective upon energization to release the thread tension for the needle thread during the automatic process of severing the threads, and also for projecting the thread wiper to move it into thread-trapping position during said releasing of thread tension, and upon deenergization to return the wiper to its starting position after the restoration of the thread tensioning, thus to deflect the needle thread part extending down from the needle eye and



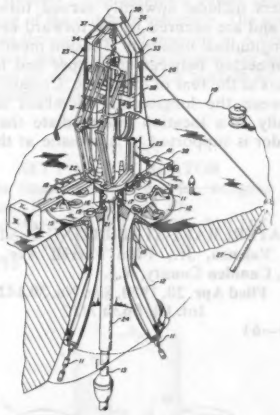
prevent objectionable clamping thereof under the presser foot.

3,601,075

RISER SUPPORT STRUCTURE

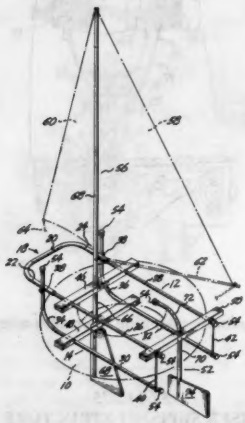
John M. Deslierres, Rolling Hills, Calif., assignor to North American Rockwell Corporation

Filed July 2, 1969, Ser. No. 838,513
Int. Cl. 175 *7;* **B63b** *35/00;* **E21b** *43/01*
U.S. Cl. 114—0.5 **2 Claims**



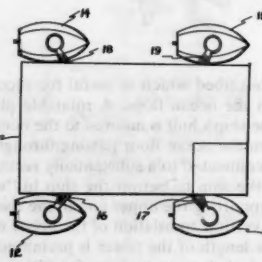
A ship is described which is useful for recovery of liquid minerals from the ocean floor. A rotatable plug through an aperture in the ship's hull is moored to the ocean floor with a riser pipe from the ocean floor passing through the center of the plug and connected to a substantially vertically extending tower above the ship to permit the ship to "weather-vane." The tower, supporting the upper end of the riser, rotates with the ship, and vertical translation of the upper end of the riser relative to the length of the tower is permitted. The tower is mounted on gimbals near its base for tilting relative to the deck of the ship to remain aligned with the riser end. A tube connected to the tower extends below the gimbals and surrounds the riser. Rollers at the lower end of the tube engage the riser to permit longitudinal motion of the tube relative to the riser, and transfer some of the tilting force between the riser and the tower. The tube is rotatable about its axis to remain fixed relative to the riser while the ship rotates.

3,601,076
SAIL BOAT
Ward W. Meeks, 1900 1st Ave. S. First South and Halgate, Seattle, Wash.
Filed June 18, 1969, Ser. No. 834,279
Int. Cl. B63b *7/00, 35/00*
U.S. Cl. 114—39 **9 Claims**



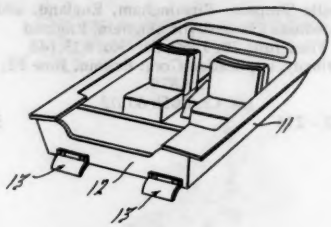
An inflated annular tube (e.g. a truck tire inner tube) is clamped between upper and lower parts of a sail and rudder carrying frame. Each such frame part comprises a pair of laterally spaced longitudinal members. The lower longitudinal members include upwardly turned forward portions which meet and are secured to the forward end portions of the upper longitudinal members. Tension members are vertically interconnected between the upper and lower longitudinal members at the rear of the frame. Crosstie members extending between the longitudinal members support a sail mast generally at a location intermediate the ends of the boat. A rudder is supported by a crosstie at the rear of the boat.

3,601,077
WATERCRAFT-STABILIZING SYSTEM
Samuel W. Valenza, Jr., 1405 Farrell Ave., Cherry Hill Township, Camden County, N.J.
Filed Apr. 20, 1970, Ser. No. 30,142
Int. Cl. B63b *1/10*
U.S. Cl. 114—61 **9 Claims**



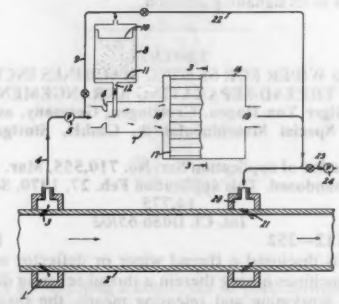
The craft is supported on a plurality of legs extending from its body to a plurality of pontoons on which are mounted elements of the stabilizing system including two sets of shock absorbers operative respectively to minimize the transmission of pontoon pitch and roll movements to the legs. Other elements of the stabilizing system include another set of shock absorbers coupled between the upper ends of the legs and the craft body and operative to eliminate substantially entirely the transmission of pontoon movements to the craft body.

3,601,078
AUTOMATIC TRIM TAB
William A. Bedford, Jr., Longboat Key, Fla., assignor to William A. Bedford, Jr. and Ann M. Bedford, a part interest to each
Filed Jan. 19, 1970, Ser. No. 3,814
Int. Cl. B63b *1/22*
U.S. Cl. 114—66.5 **6 Claims**



A pair of spaced trim tabs are supported at the bottom of the transom of a boat to extend therebelow when the boat is at rest and when operating at a low speed. Each tab is a like unit element made of a suitable plastic material which is deflectable and which has memory to return to its original position when pressure is removed therefrom. A securing flange has an extending portion of arcuate shape tapering from the flange to the free edge which extends below the bottom of a boat when the boat is at rest. As the speed of the boat increases the extending portion moves upwardly until the boat reaches planing speed at which point the arcuate portion will straighten out and extend rearwardly of the boat.

3,601,079
METHOD AND APPARATUS FOR APPLYING DRAG-REDUCING ADDITIVES
Walter B. Giles, and William T. Pettit, III, both of Scotia, N.Y., assignors to General Electric Company
Continuation-in-part of application Ser. No. 786,510, Aug. 2, 1968, which is a continuation-in-part of application Ser. No. 642,961, June 1, 1967, now abandoned. This application Oct. 24, 1969, Ser. No. 869,314
Int. Cl. B63b *1/34*
U.S. Cl. 114—67 **7 Claims**



A water-soluble polymeric material is mixed with water rapidly in the mixing chamber. In the mixing chamber polymer and water are thoroughly mixed at a high velocity of water to produce turbulence whereupon the mixed solution passes from the mixing chamber to a hydration tank where it

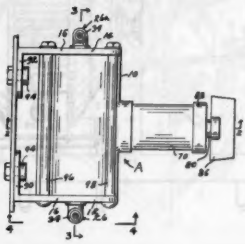
is hydrated dynamically to provide a uniform polymer solution. From the hydration tank the hydrated polymer is diluted with bypass flow to a desired concentration for injection or it may be injected directly into the main flow of water which may be along the sides of a conduit or along the sides of a moving vessel.

3,601,080

TIRE-PRESSURE-WARNING DEVICE

William O. Nygard, Rte. 1 Box 27, Meadowlands, Minn.

Filed Apr. 15, 1970, Ser. No. 28,628
Int. Cl. B60e *23/06*
U.S. Cl. 116—34 **9 Claims**



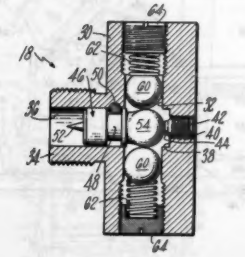
A cylinder for attachment to an outboard dual wheel, a free member slidably mounted in said cylinder and dividing the cylinder into sealed compartments, a plate sealing off each end of the cylinder, springs urging the free member centrally of the cylinder, air-actuated signal means mounted on the cylinder, the cylinder having an air escape hole centrally thereof and normally covered by said free member and communicating with the signal means when the free member is moved not to cover the air hole, first inlet means communicating with one of said compartments, and second inlet means communicating with the other of said compartments.

3,601,081

TRIGGER MECHANISM FOR PASSENGER-RESTRAINING SAFETY DEVICE

William M. Smith, and Francis N. Wroble, both of Wetherfield, Conn., assignors to The Ensign-Bickford Company, Simsbury, Conn.

Filed Jan. 21, 1970, Ser. No. 6,162
Int. Cl. G01p *15/00*
U.S. Cl. 116—114 AH **3 Claims**



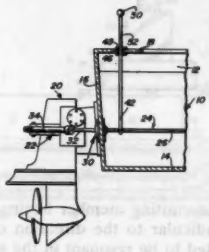
A directional trigger mechanism responsive to a predetermined decelerating or impact force for explosively deploying a passenger-restraining safety device in a vehicle comprises a compact housing having first and second passages intersecting at substantially a right angle with the second passage extending laterally from the first passage at a point intermediate the ends thereof. A slidable weight positioned within the second passage carries a firing pin on one end thereof and a spherical cam portion on the opposite end thereof, the cam portion being disposed within the intersection of said first and second passages when the weight is in its retracted cocked position. A pair of weight retaining and driving spheres are positioned within the first passage and are biased into engagement with opposite sides of the spherical cam portion to releasably retain the firing pin in its cocked position and positively drive the weight toward its actuating position upon release from the cocked position.

3,601,082

REMOTE READING OUTDRIVE TILT INDICATOR

Kenneth W. Wise, P.O. Box 309, Walla Walla, Wash.

Filed Feb. 26, 1970, Ser. No. 14,569
Int. Cl. G01d *21/00*
U.S. Cl. 116—114 **6 Claims**



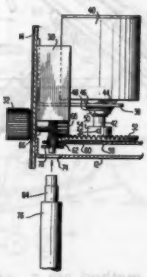
An upright staff whose lower end is attached to the inboard end of an outdrive-steering cable assembly of the type including a transom-mounted ball-and-socket joint through which the cable assembly passes. The lower staff end is attached to the cable assembly adjacent but spaced from the ball-and-socket joint and raises and lowers as the adjacent portion of the steering cable assembly raises and lowers in response to tilting of the outdrive assembly. The upper end of the staff projects through a small opening in a deck portion of the transom and may have indicia thereon for registry with the upper surface of the transom deck portion for indicating the tilt of the outdrive unit.

3,601,083

SET POINT INDICATOR

Clifford Douglas Stone, Plantation, Fla., assignor to Airpax Electronics, Inc., Fort Lauderdale, Fla.

Filed Mar. 25, 1969, Ser. No. 810,165
Int. Cl. G01p *13/00*
U.S. Cl. 116—115 **6 Claims**

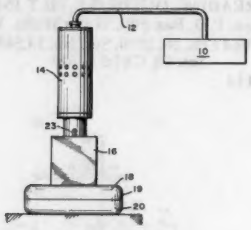


Disclosed is a combination electrical control device and indicator particularly adapted for use as a set point indicator for a furnace controller. The unit comprises a potentiometer and digital counter coupled by a gear train to a manually adjustable control knob. One of the gears of the gear train is releasably mounted so that the reference point of the counter can be readily adjusted to indicate different temperature ranges.

3,601,084
ULTRASONIC-VIBRATION-TRANSMITTING MEMBER

Tamas A. Biro, and Jeffrey R. Sherry, both of Danbury, Conn., assignors to Branson Instruments, Incorporated, Stamford, Conn.

Filed Nov. 21, 1969, Ser. No. 878,605
Int. Cl. B06b 3/00
U.S. Cl. 116—137 A 7 Claims

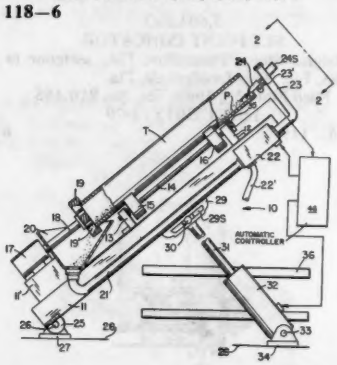


A vibration-transmitting member having large dimensions in planes perpendicular to the direction of vibration transmitted and adapted to be resonant in the sonic or ultrasonic frequency range is provided with internal bores to interrupt Poisson couplings between portions of such member. The bores are parallel to the direction of the vibration transmitted by the member.

3,601,085
PIPE-COATING APPARATUS

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J.

Continuation-in-part of Ser. No. 305,002, Aug. 27, 1963, abandoned, which is a continuation-in-part of Ser. No. 589,300, June 4, 1956, abandoned, which is a continuation-in-part of Ser. No. 589,848, May 28, 1956, Pat. No. 3,166,829
Filed Oct. 14, 1968, Ser. No. 767,378
Int. Cl. B05c 5/00, 7/02, 11/08
U.S. Cl. 118—6 1 Claim

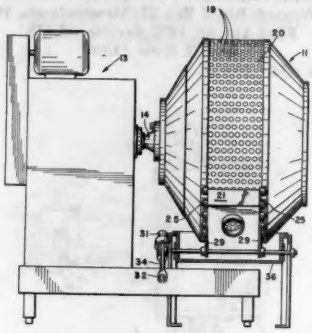


An apparatus and method are provided for coating sections of tube or pipe while the pipe is inclined to the horizontal. In one form of the invention, sections of pipe of equal length are individually fed to the apparatus along a horizontal transfer device such as a flight conveyor and, after being received by the coating apparatus, are tilted at an angle to the horizontal and are thereafter rotated about the longitudinal axis of the pipe while coating material is fed to the upper end. As a result, the handling of the pipe and the coating of the inside of same is relatively simple and may be effected immediately.

3,601,086
TABLET-COATING APPARATUS

Van B. Hostetler, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 3,213, Jan. 15, 1970, which is a division of Ser. No. 708,261, Feb. 26, 1968, abandoned
Filed Aug. 12, 1970, Ser. No. 63,126
Int. Cl. A23g 3/26
U.S. Cl. 118—19 3 Claims

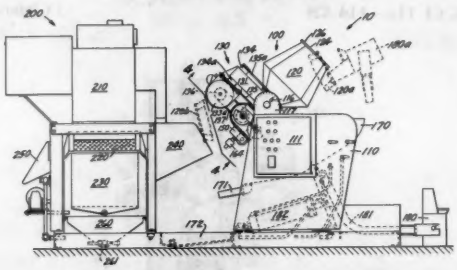


A tablet-coating apparatus is provided having a vented area about the periphery of a rotary tumbling drum. Exhaust means is removably positioned adjacent a portion of the drum's vented section in a manner which draws air and the coating material through the bed of tumbling tablets.

3,601,087
SURFACE TREATING

John W. Pearson, West St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 712,884, Jan. 22, 1968, abandoned, which is a division of Ser. No. 312,220, Sept. 27, 1963, Pat. No. 3,494,327
Filed Oct. 2, 1969, Ser. No. 863,066
Int. Cl. B05c 11/12
U.S. Cl. 118—56 3 Claims



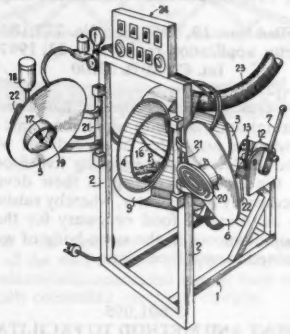
Mechanical plating is carried out in container which is simultaneously slowly rotated and rapidly axially reciprocated. The container may be mounted at one end of a cantilevered leaf spring, a single motor simultaneously rotating the container and driving eccentric weights which sinusoidally deflect the spring. Plated parts, liquid, impact media, and other barrel contents may be discharged into one end of an operatively connected open end separating or post-treating drum which tumbles the parts when rotated in one direction and discharges them from the other end when rotated in the opposite direction.

3,601,088

APPARATUS FOR TREATING SMALL PARTS, SUCH AS SLIDERS FOR SLIDING FASTENERS

Guy Serge Pierre Lacam, Paris, France, assignor to La Fermeture Ailee, Airaines, France

Filed June 19, 1969, Ser. No. 834,786
Claims priority, application France, Aug. 30, 1968, 164,664
Int. Cl. B05c 5/00
U.S. Cl. 118—64 7 Claims



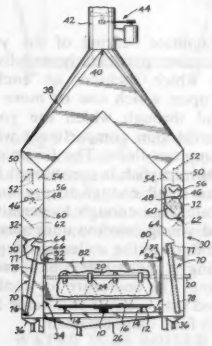
Apparatus for applying paint on metal parts, and especially sliders for sliding fasteners. The apparatus comprises a container for the metal parts which is rotated by driving means inside an enclosure. Two covers are adaptable in succession on the enclosure. One cover has paint-spraying means and the other heating means for baking the paint sprayed onto the sliders. The enclosure comprises heating means.

3,601,089

SPRAY BOOTH

James P. Petermann, Eugene; Robert J. Slagle, Springfield; Russell W. Wilson, Eugene, and Leslie M. Steffensen, Springfield, all of, Oreg., assignors to Georgia-Pacific Corporation, Portland, Oreg.

Filed Nov. 17, 1967, Ser. No. 684,012
Int. Cl. B05c 11/16
U.S. Cl. 118—326 4 Claims



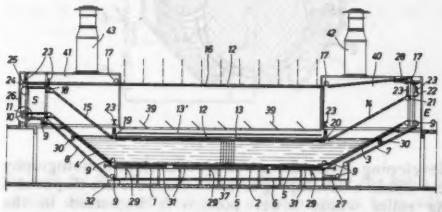
A spray booth includes spray means mounted above a support and arranged for spraying work thereon with the production of attendant overspray. At least one enclosed overspray collecting chamber is located beside the support. The chamber has an air inlet port at its lower inner end and an air exhaust port at its upper end. An exhaust fan entrains the overspray and passes it through the chamber. A wash liquid spray cooperates with baffles and a contact screen in absorbing the overspray in the wash liquid. Combination shield and guide elements positioned on both sides of the support transversely of the chamber shield the booth and guide the flow of air into the chamber.

3,601,090

CONTINUOUS IMPREGNATION PLANT OF CARDBOARD OR LIKE SUPPORT

Roger Vallon, Rouen, France, assignor to Societe Anonyme: O.F.I.C. Omnium Francais Industriel Et Commercial, Paris, France

Filed June 17, 1969, Ser. No. 834,069
Claims priority, application France, July 16, 1968, 159386
Int. Cl. B05c 3/00
U.S. Cl. 118—423 6 Claims



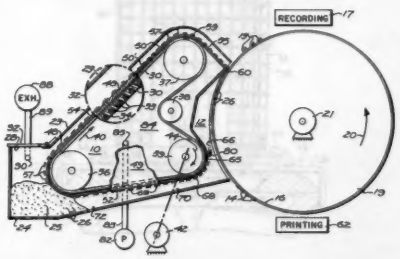
Installation for the continuous impregnation of cardboard, felt, or other similar products, in corrugated or noncorrugated sheets comprising a tank of generally parallelepipedic shape, the two end walls of which are inclined so as to permit progressive ingress and egress of sheets or boards of card, felt, or other similar material in continuous succession into and out of the impregnation product, which is liquid or brought to and kept in the liquid state and which is introduced into said tank, said sheets or boards being held vertical between two pairs of conveyor chains, namely a bottom pair and a top pair, which carry them from an end for the entry and introduction of the sheets or boards between the chains to the other end, which is the outlet and where the sheets are unhooked after having been entirely immersed over a large part of their travel in the impregnation bath.

3,601,091

MAGNETIC PRINTOUT EQUIPMENT

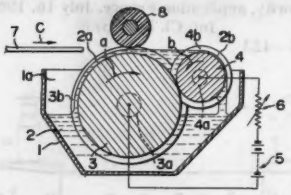
George G. Preckshot, Altadena, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Aug. 18, 1969, Ser. No. 850,958
Int. Cl. G03g 13/00
U.S. Cl. 118—636 15 Claims



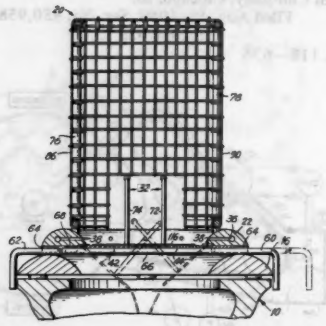
Apparatus for conveying magnetizable toner particles from a toner supply to a toning region for toning magnetic images have a magnetic conveyor belt for advancing toner particles from the toner supply to the toning region. A toner guide shields the conveyor belt and guides the advancing toner particles, and a mechanism maintains the magnetic conveyor belt in spaced relationship to a portion of the toner guide in the vicinity of the toning region to reduce magnetic interference with magnetic images.

3,601,092
DEVELOPING DEVICE FOR WET PROCESS ELECTROPHOTOGRAPHY
Toyokazu Satomi, Kawasaki, Japan, assignor to Kabushiki Kaisha Ricoh, ota-ku, Tokyo, Japan
Filed Feb. 26, 1970, Ser. No. 14,290
Claims priority, application Japan, Feb. 28, 1969, Feb. 28, 1969, 44/15574;44/18662
Int. Cl. D05b 5/00
U.S. Cl. 118—637 4 Claims



A developing device for a wet process electrophotography wherein within a developing solution chamber are disposed a wetting roller whose lower portion is immersed in the developing solution and a developing roller in parallel with the wetting roller in such a manner that a developing solution reservoir may be produced between the two rollers upon rotation thereof, the wetting roller being applied with a potential having the polarity same as that of the tonner in the developing solution while the developing roller, a potential having the polarity opposite to that of the tonner; and a sensitized member is fed with its surface facing against the two rollers through the developing chamber. The device may be made in compact in size even though it is provided with means for prewetting the sensitized member.

3,601,093
PET ACCESSORY FOR ATTACHEMENT TO A COMMODE
Floraine Cohen, 9838 57th Ave., Lefrak City, Queens, N.Y.
Filed Aug. 27, 1969, Ser. No. 853,258
Int. Cl. A01k 29/00
U.S. Cl. 119—1 8 Claims

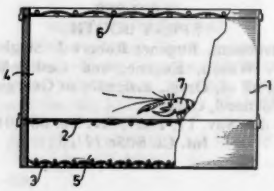


A pet accessory for attachment to a commode is provided which rests atop a conventional commode and is held thereon by hooks which prevent horizontal displacement. The accessory includes an oval support having a center opening disposed above the commode, there being a trap door arrangement which can be controllably operated for purposes of discharging waste material. The oval support is provided with an interior channel having radially disposed ports opening inwardly towards the trap door arrangement. Additionally, there is provided a collapsible and detachable cage which can be mounted on the support to hold the pet therein. A hose arrangement is provided for connection with the aforesaid interior channel and in the hose is arranged a dispenser of a disinfectant. A disposable paper mat is positioned on the trap door arrangement.

3,601,094
ARTIFICIAL PRODUCTION OF THE YOUNG OF COASTAL CRUSTACEA
Ziro Kittaka, 719, Higashikata, Ibusuki-shi, Kagoshima-ken, Japan
Filed Nov. 19, 1968, Ser. No. 777,189
Claims priority, application Japan, Nov. 22, 1967, 42/75034
Int. Cl. A01k 61/00
U.S. Cl. 119—2 7 Claims

Larvae of a crustacean are caused to hatch and develop in a body of natural sea water into which inorganic and organic nutritive substances are added in accordance with the properties of the water, thereby inducing live food organisms required by the larvae according to their development to multiply successively in the water, whereby raising of the larvae and the culturing of food necessary for the larvae are carried out simultaneous in the same body of water under a stably maintained natural food chain.

3,601,095
EQUIPMENT AND METHOD TO FACILITATE THE REARING OF THE YOUNG OF SPAWN-PRODUCING CRUSTACEANS
Hans Olof Lennart Olsson, Simontorps Sateri, Sweden, assignor to AB Vapor, Lund, Sweden
Filed Sept. 12, 1969, Ser. No. 857,313
Claims priority, application Sweden, Sept. 26, 1968, 12,964/68
Int. Cl. A01k 61/00
U.S. Cl. 119—2 5 Claims

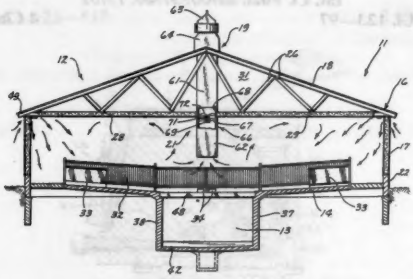


Apparatus to facilitate rearing of the young of spawn-producing crustaceans, particularly crayfish, comprises a boxlike structure which includes an enclosure having a foraminous floor upon which one or more mother crayfish are supported and through which the young drop, after hatching, into a collection compartment which is also provided with a foraminous floor. The foraminous floor which supports the mother crayfish is constituted by a wire netting having a mesh size small enough to prevent passage of the mother crayfish but large enough to permit free passage of the newly hatched young into the underneath collection department, and the floor of the collection department is also a wire netting having a mesh size small enough to prevent escape of the young. The enclosure for confining the mother crayfish is provided with a cover also made from wire netting and through which food can be passed.

3,601,096
VENTILATING AND TEMPERATURE CONTROL SYSTEM
Dwayne C. Rutherford, Vail, Iowa
Filed Aug. 4, 1969, Ser. No. 847,372
Int. Cl. A01k 1/00
U.S. Cl. 119—15 3 Claims

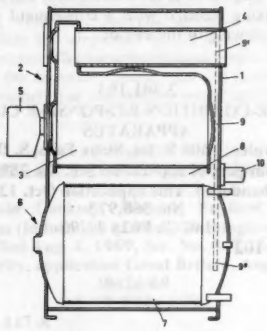
A ventilating and temperature control system for a closed, rectangular swine house, the swine house having a manure sump filled with water disposed centrally and longitudinally

therein. Air inlets, with suitable baffles, are formed longitudinally through the sidewalls into the swine house proximate the juncture of the sidewalls and the roof and a plurality of air outlet ducts are formed through the roof in space-apart



relation over the manure sump. The ducts extend downwardly of the roof and are equipped with blowers. The blowers are electrically connected into at least two separate, thermostatically controlled, electrical circuits.

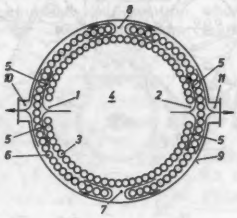
3,601,097
BOILER
Hans Viessmann, 3559 Battenberg im Hain, Germany
Filed Oct. 21, 1969, Ser. No. 868,158
Claims priority, application Germany, Oct. 24, 1968, P 18 04 845.8
Int. Cl. F22b *33/02*
U.S. Cl. 122—37 **8 Claims**



A boiler comprising a housing adapted to contain water. A combustion chamber located in the upper portion of the housing and a heat exchanger located in the lower portion of the housing. The heat exchanger holds a quantity of water for consumption. A duct is located within the housing connecting the space above the combustion chamber and the space below the heat exchanger. A pump is provided to circulate the water in the housing through the duct.

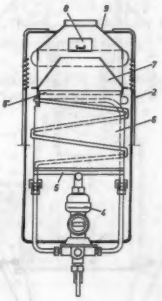
3,601,098
WATER TUBE BOILER
Willibald Kraus, Grebenstein, Germany, assignor to Rheinstahl Wenschel Aktiengesellschaft, Germany
Filed Feb. 20, 1970, Ser. No. 12,936
Claims priority, application Germany, Feb. 25, 1969, P 19 09 393.7
Int. Cl. F22b *21/00*
U.S. Cl. 122—235 **3 Claims**

A water tube boiler with circular, rectangular or polygonal cross section, and with two or more cage heating surfaces, each of which comprises vertical pipes or tubes, and upper and lower annular or polygonal headers and/or bends, in which the cage-heating surfaces are coaxially arranged one within the other while flue gas passes in a horizontal direction through narrow high passages or lanes between the cage-heating surfaces and between the outermost cage and the flue gas chamber mantle in circumferential direction of said cages. The arrangement is such that with predetermined dimensional data such as gas flow and pressure loss on the gas side, the geometric dimensions of the lanes passed



through by the flue gas are so selected that the ratio of the mutual distance of each two adjacent tubes from adjacent cages in a direction transverse to the flow direction of the flue gas to the pipe or tube diameter is less than 1.5 while the number of the passages or gases passed through in a parallel manner by the flue gas is determined by the flow off of the flue on one or both sides by one or more slots at the circumference or between two or more cages.

3,601,099
GAS-HEATED ONCE-THROUGH POSITIVE FLOW WATER HEATERS
Karl-Ernst Vaillant; Helmut Schmidt, and Robert Lehnartz, all of Remscheid, Germany, assignors to Joh. Vaillant KG., Remscheid, Germany
Filed May 19, 1969, Ser. No. 825,554
Claims priority, application Germany, Aug. 2, 1968, P 17 79 360.1
Int. Cl. F22b *37/36*
U.S. Cl. 122—494 **10 Claims**

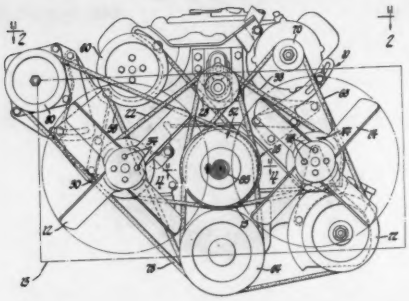


A gas water heater has a heater shaft terminating in a fin block. A pair of exhaust hoods are used interchangeably on the water heater. Each of these hoods has a bottom portion fitting the top of the fin block. One of the hoods incorporates a back-draft-flow-preventing apparatus. The other incorporates a centrifugal blower with a vertical shaft and a vertically extending intake with a horizontally extending discharge.

3,601,100
ENGINE-COOLING SYSTEM

Theodore N. Louckes, Lansing, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 12, 1969, Ser. No. 823,591
Int. Cl. F01p 7/12
U.S. Cl. 123—41.12 4 Claims

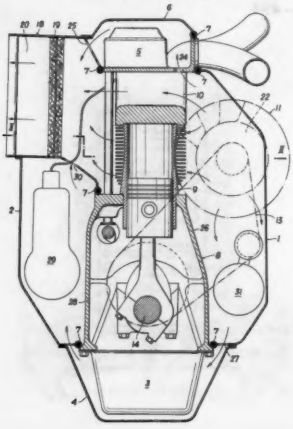


An engine-cooling system including dual low-configuration, side-by-side cooling fans whose pulleys may be operated by the same endless belt, or by two separate belts, from a single- or multigroove pulley, respectively, secured to a single thermostatically controlled viscous fluid, shear-type clutch for variable speed ratios with respect to engine speed, in response to varying ambient temperatures.

3,601,101
AIR-COOLED INTERNAL COMBUSTION ENGINE WITH SOUNDPROOFING ENCLOSURE

Gerhard Thien; Heinz Fachbach, and Bernd Nowotny, all of Graz, Austria, assignors to Hans List, Graz, Austria

Filed May 15, 1969, Ser. No. 824,899
Claims priority, application Austria, June 6, 1968, A5,433/68
Int. Cl. F01p 1/02
U.S. Cl. 123—41.70 6 Claims

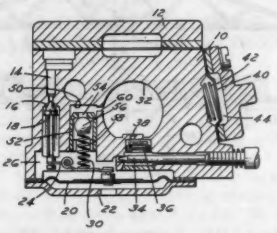


An air-cooled internal combustion engine having a cooling air blower driven by the crankshaft and the soundproof enclosure surrounding the outer surface of the engine. A distributing chamber is provided in the cavity formed within the soundproof enclosure and cooling air is supplied by the blower inside the cavity and into the distributing chamber which from there passes over the cylinder cooling areas and various parts of the engine.

3,601,102
VIBRATION-RESPONSIVE FUEL SUPPLEMENT VALVE

Kenneth C. Schneider, and Charles E. Holm, both of Cass City, Mich., assignors to Walbro Corporation, Cass City, Mich.

Filed Jan. 16, 1970, Ser. No. 3,439
Int. Cl. F02d 33/00, 31/00, 19/02
U.S. Cl. 123—97 4 Claims

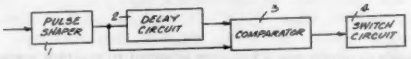


A diaphragm carburetor with a fuel valve controlled by a lever responsive to the position of the diaphragm with standard fuel jet and idle jet openings controlled by needle valves and an overrun protector valve to prevent engine runaway consisting of a fuel passage leading from the diaphragm chamber to the mixing passage and a ball seat in that passage with a spring-pressed ball in the seat, the spring bearing at one end on the ball and at the other end on the diaphragm lever. Thus, the spring normally acts to close the fuel valve and the ball valve but under open throttle conditions, the vibration of the engine on which the carburetor is mounted will move the ball valve from its seat and allow bleeding of fuel to the mixing passage with a consequent overrich fuel condition and slowing of the engine.

3,601,103
ENGINE-CONDITION-RESPONSIVE CUTOFF APPARATUS

LaDell Ray Swiden, 1608 S. 1st, Sioux Falls, S. Dak.

Continuation-in-part of application Ser. No. 780,441, Dec. 2, 1968, now abandoned. This application Oct. 13, 1969, Ser. No. 868,973
Int. Cl. F02p 11/00
U.S. Cl. 123—102 7 Claims



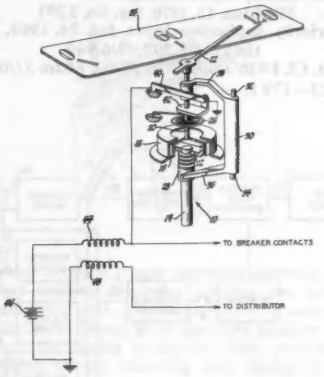
Apparatus for inhibiting the operation of an engine in response to engine speeds which exceed a preset number of revolutions per minute employs a cutoff circuit for detecting and shaping firing signals and a switch interposed in either the ignition powering circuit, or the fuel circuit of a diesel, which is operable upon a detected predetermined overlap of a shaped signal and the previous signal delayed a predetermined interval. The apparatus also utilizes temperature and pressure-sensing devices which are effective to operate the cutoff circuit in response to the detection of adverse temperature or pressure conditions within the engine. An engine cutoff device, i.e. a relay, is operated in response to a true output from an OR gate which has as its inputs the overlap detection circuit and the individual sensing devices. The cutoff device and the OR gate are also provided as a separate package for applications which require engine conditions detection other than overspeed detection.

3,601,104

PROPORTIONAL CONTROL TOP SPEED LIMITER

Mark Newton Culver, and Douglas E. Mark, both of Davison, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 25, 1970, Ser. No. 14,078
Int. Cl. F02p 5/08
U.S. Cl. 123—117 2 Claims



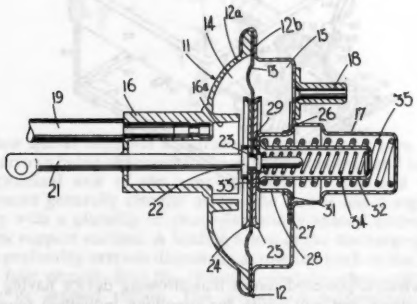
A motor vehicle proportional control top speed limiter for providing a smooth entry into the speed limiting mode. A flexible contact secured at one end is oscillated by an eccentric cam driven by the speedometer drive cable. A movable contact is moved in conjunction with the indicated speed of the speedometer such that the movable contact moves into the flexible contact so as to periodically complete an electrical circuit between the movable contact and the flexible contact as the flexible contact is oscillated. The percentage time period during which the movable contact and the flexible contact complete the electrical circuit increases as the vehicle speed increases. The vehicle ignition system is disabled by the closure of the movable contact and the flexible contact to provide for proportional control top speed limiting.

3,601,105

VACUUM-OPERABLE UNITS FOR USE WITH IGNITION DISTRIBUTORS

William Harold Cooksey, Walsall, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Aug. 4, 1969, Ser. No. 847,254
Claims priority, application Great Britain, Aug. 12, 1968, 38426/68
Int. Cl. F02p 5/10
U.S. Cl. 123—117 A 4 Claims



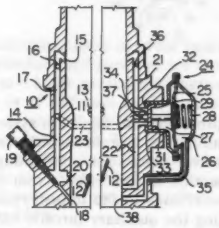
A vacuum-operable unit for use with an ignition distributor includes a casing which is divided into first and second chambers by a diaphragm. A plunger is slidably received in the first chamber, and is connected at one end to the diaphragm, and extends at its other end from the first chamber for connection to the distributor, so that axial movement of the plunger varies the ignition timing of the distributor. The first chamber is vented to atmosphere, and the second chamber includes a conduit through which vacuum can be applied to the second chamber. A spring arrangement acts on the diaphragm to urge the diaphragm from a first position wherein, in use, the ignition timing of the distributor is advanced, to a second position wherein the ignition timing of the distributor is in a minimum advance position for normal operation. The spring arrangement is capable of urging the diaphragm from the second position to a third position wherein the ignition timing of the distributor is retarded beyond the minimum advance position, when opposite sides of the diaphragm are subject to equal pressures.

3,601,106

INTAKE MANIFOLD VACUUM CONTROL SYSTEM

Yasuo Nakajima, Yokosuka, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan

Filed Mar. 18, 1969, Ser. No. 808,262
Claims priority, application Japan, Mar. 23, 1968, 43/18541
Int. Cl. F02m 23/04; F02d 9/00; F02m 23/00
U.S. Cl. 123—124 4 Claims



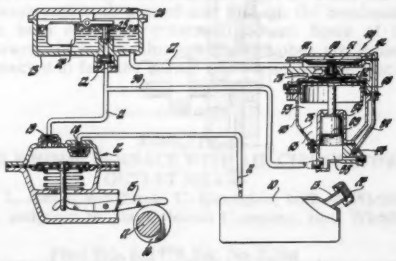
Disclosed herein is a carburetor for reducing the amount of hydrocarbons contained in exhaust gases emitted from an automotive gasoline-powered engine during deceleration of the automobile. Such reduction is accomplished by lowering the vacuum at the intake manifold of the engine through introduction of a proper amount of air-fuel mixture into the intake manifold by way of an additional bypass passageway and in response to the drop of the vacuum at the intake manifold.

3,601,107

FUEL EVAPORATIVE LOSS CONTROL SYSTEM WITH ACCUMULATOR

Earl W. Rohrbacher, Troy, and Donald B. Elfes, Royal Oak, both of, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 26, 1970, Ser. No. 14,270
Int. Cl. F02m 37/10
U.S. Cl. 123—136 8 Claims



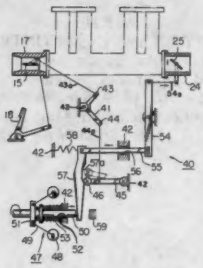
A fuel evaporative loss control system in which fuel is drained from the carburetor fuel bowl of the carburetor of an internal combustion engine into an accumulator when the engine is not in operation, the fuel thus drained into the accu-

mulator being returned to the fuel bowl upon resumption of engine operation by fuel pump pressure.

3,601,108
INTAKE MANIFOLD FOR AUTOMOTIVE FUEL INJECTION SYSTEM

Shuya Nambu, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Aug. 8, 1969, Ser. No. 848,637
Int. Cl. F02m *39/00;* **F02b** *3/00;* **F02m** *23/04*
U.S. Cl. 123—139 BG **8 Claims**

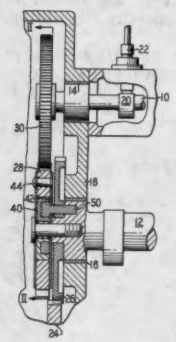


An intake manifold for fuel injection system of an internal combustion engine having a main throttle valve, and an auxiliary throttle valve each communicating with the atmosphere. The suction inertia effect (ram effect) of the intake manifold contributes to the improvement of the engine torque by operating the auxiliary throttle valve in relation to the opening of the main throttle valve and engine speed.

3,601,109
ENGINE FUEL PUMP TIMING MECHANISM

James S. Barton, Morton; Robert B. Bunting, Peoria Heights; Richard A. DeKeyser, Peoria; Marion R. Joy, Peoria, and Dennis M. Ruttle, East Peoria, all of, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 25, 1969, Ser. No. 836,413
Int. Cl. F02m *59/20*
U.S. Cl. 123—139 AP **7 Claims**

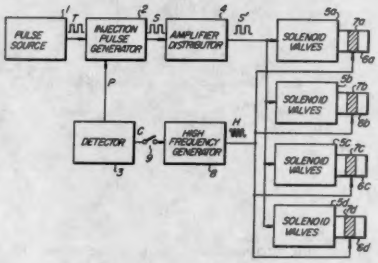


Timing mechanism for adjusting the angular disposition of an engine fuel pump cam shaft in response to changes in engine speed which comprises flyweight means to adjust the angular relationship of two rotating elements. In the present case, these elements are not coaxial with the fuel pump cam shaft, but one is connected thereto by a gear train to isolate the flyweight means from shock or impulse forces which are transferred through the cam shaft and to increase inertia without undue increase in mass and complexity.

3,601,110
FUEL INJECTION SYSTEM

Isezi Kamazuka, Kariya-shi, Japan, assignor to Nippondenso Kabushiki Kaisha, Aichi-ken, Japan

Filed Jan. 12, 1970, Ser. No. 2,091
Claims priority, application Japan, Jan. 24, 1969, Jan. 30, 1969, 44/5,397;44/6,940
Int. Cl. F02b *3/00;* **F02n** *17/00;* **F02m** *31/00*
U.S. Cl. 123—179 L **3 Claims**

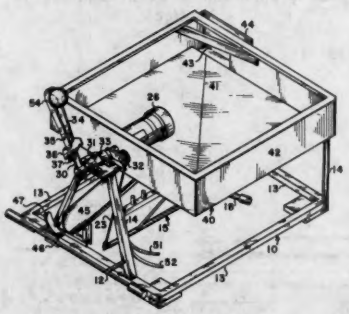


A fuel injection system for an internal combustion engine provided with solenoid injection valves wherein in order to ensure a positive starting of the engine in cold weather, high frequency heating means are provided for heating the injection valves such that when the engine is at a low temperature, a high frequency generator for said heating means automatically operates to heat the injection valves.

3,601,111
TENNIS BALL-THROWING TRAINING DEVICE

James G. Embry, 409 Zephyr Drive, San Antonio, Tex.

Filed Aug. 27, 1970, Ser. No. 67,364
Int. Cl. F41b *15/00*
U.S. Cl. 124—7 **8 Claims**

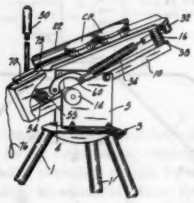


An electric-powered tennis ball-throwing device having a feed hopper and ball chute for supplying individual tennis balls to a spring-propelled throwing arm, oscillating components mounted on resilient feet vibrate the entire machine to facilitate the ball feed function, the throwing arm incorporate adjusting means for varying the height of the ball trajectory and the speed of propulsion.

3,601,112
TARGET TRAP HAVING AN OVERCENTER COCKING LEVER

Vernon F. Dale, Onalaska, Wis.

Filed Dec. 5, 1969, Ser. No. 882,676
Int. Cl. F41b 7/00
U.S. Cl. 124—8 5 Claims

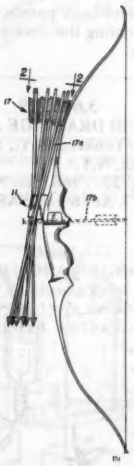


A target trap having a trigger operated throwing arm and an overcenter cocking lever for cocking the spring that swings the throwing arm. The arrangement is such that the throwing arm can be swung to its operative position and then loaded before the spring is cocked, thus preventing accidental tripping of the throwing arm during its loading operation.

3,601,113
ROTARY BOW QUIVER

Marvin L. Wilkie, 8115 W. 62nd Avenue, Arvada, Colo.

Filed Aug. 12, 1969, Ser. No. 849,375
Int. Cl. F41c 25/00
U.S. Cl. 124—48 15 Claims

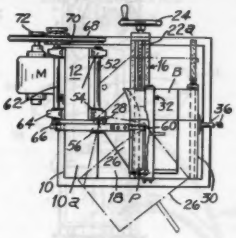


Bow quiver supports a plurality of arrows on a bow with the arrows being obliquely inclined to one another and to the longitudinal axis of the support body and disposed in a balanced generally circular array. The quiver has a support body with a plurality of circumferentially spaced individual arrow support stations. A leading arrow in the discharge position preferably extends diagonally across the back of the bow and falls directly into the shooting position when released from its support station. The arrows are successively advanced to a discharge position by the rotation of the support body. One form of support body is essentially cylindrical and has a plurality of slots extending along and through the outer periphery of the body in which the arrows are releasably supported. Another form has upstanding end walls with cooperative offset slots therein together with a central stop member against which the arrow pivots to release the arrow through the slot openings in a pivotal action.

3,601,114
METHOD AND APPARATUS FOR CUTTING COMPLEX SHAPES

Arnold M. Cook, Holden, Mass., assignor to Norton Company, Worcester, Mass.

Filed Jan. 21, 1969, Ser. No. 792,702
Int. Cl. B28d 1/02; B27b 19/02
U.S. Cl. 125—19 14 Claims

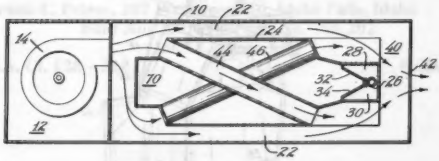


Mold plates of complex shape used for making hot pressed ceramic plates of similar configuration are cut out of a block of graphite with a saw blade preshaped lengthwise to a curvature of one radius or of different radii; oscillated a relatively short distance in a vertical plane and in an arc of fixed radius, about a horizontal axis. The block is supported on a member that can be fed horizontally into and pivoted about a vertical axis relative to the saw blade to produce a plate with straight and curved portions having a surface of substantially the curvature of the blade.

3,601,115
HEAT EXCHANGERS

Richard N. Weatherston, St. Paul, Minn., assignor to Weather-Rite Manufacturing, Ramsey County, Minn.

Filed Feb. 5, 1970, Ser. No. 8,876
Int. Cl. F24h 3/08
U.S. Cl. 126—110 R 10 Claims



A high-flame facing area heat exchanger in which the air passageways pass both around and through the combustion chamber in a repetitive crisscross pattern. Some of the passageways which pass through the chamber are isolated and connected to feed the burner with preheated combustion air.

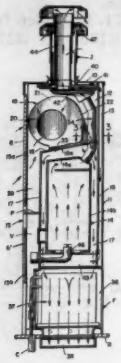
3,601,116
MOBILE HOME FURNACE WITH AIR CIRCULATOR OUTLET MEANS

Richard L. Davis, and James C. Goodgion, both of Wichita, Kans., assignors to The Coleman Company, Inc., Wichita, Kans.

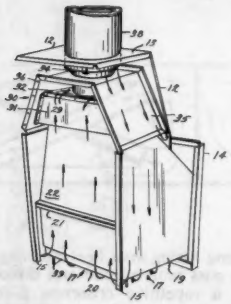
Filed Feb. 6, 1970, Ser. No. 9,264
Int. Cl. F24h 3/02
U.S. Cl. 126—110 AA 10 Claims

A compact sealed combustion furnace adapted to be mounted within a closet or alcove of a mobile home is equipped with a downflow air circulator or blower characterized by auxiliary air outlet means oriented to direct the air

discharged therefrom, first against one or more flue connection tubes, and then downwardly into the space between the combustion chamber casing and the rear wall of the exterior casing. The auxiliary air means may include passage-defining extensions on each side of the rear wall of the blower scroll, which are arranged to at least partially straddle the flue connection tube means. One or more slots can also be provided in the rear wall of the blower scroll in combination with or instead of the passage-defining extensions. In one preferred embodiment, a plurality of flue connection tubes are employed in combination with a plurality of transversely aligned slots in the rear wall of the blower scroll, the slots being oriented to direct air against and around the flue tubes.

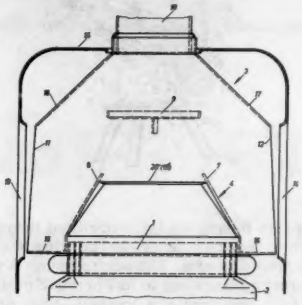


3,601,117
COUNTERFLOW FIREPLACE
Walter C. Carson, P.O. Box 1381, Savannah, Ga.
Filed Aug. 1, 1969, Ser. No. 846,911
Int. Cl. F24b *7/04*
U.S. Cl. 126—121 **7 Claims**



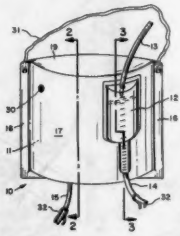
The double-walled fireplace is described which is adapted to be connected to a counterflow chimney arrangement designed to introduce cold air into the fireplace through an outer duct while the heated air is drawn out through an inner duct and discharged to the atmosphere simultaneously with flue gases from the firebox. At the point of attachment of the chimney to the firebox, a diaphragm or baffle assembly is provided which directs the cold air down the sides of the firebox. By providing suitable baffling on one side of the front and the opposite side at the rear, the air flowing down one side can be made to pass up the firebox, and the cold air from the other side can be made to pass up the rear wall of the firebox. In order to accommodate different fireplace configurations it is possible to modify the baffle structure so that different flow patterns will occur.

3,601,118
DOWNDRAFT SAFETY DEVICE FOR COMBUSTION GAS FLUES
George Hein, Huckeswagen, and Erich Tropp, Sellscheid, both of, Germany, assignors to Joh. Vaillant KG
Filed Oct. 20, 1969, Ser. No. 867,439
Claims priority, application Germany, Dec. 3, 1968, P 18 12 361.0
Int. Cl. F23j *11/00*
U.S. Cl. 126—307 A **2 Claims**



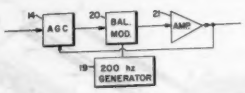
This invention relates to an improvement in a downdraft safety device, e.g., for a gas-heated liquid heater. The device is arranged inside of a cowling provided with lateral outlets, and includes a lower flue gas collecting hood defined in front and in the rear by the front and back panels of the downdraft safety device, and a baffle arranged above the glue gas collecting hood in the vicinity of the outlet connected between front and back panels. The hood defining, inwardly inclined portions of the front and back panels, each provide an opening at their tops for venting the device through the respective front and back panels.

3,601,119
BODY FLUID DRAINAGE APPARATUS
Harvey J. Engelsher, Yonkers, N.Y., assignor to Horizon Industries, Ltd., Bronx, N.Y.
Filed Dec. 23, 1968, Ser. No. 786,161
Int. Cl. A61b *5/10;* **A61f** *5/44*
U.S. Cl. 128—2 **5 Claims**



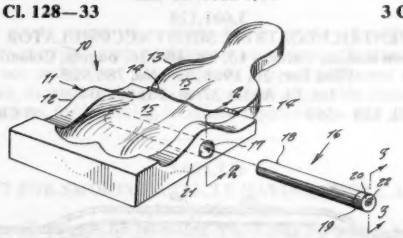
A container for the drainage of body fluids such as urine has a partition defining and separating inlet and storage chambers for measuring and then storing the fluid, with the partition being open at its upper part to provide an interconnecting passage between the chambers. An inlet tube extends downward, slightly into the inlet chamber where its discharge end terminates with a one-way valve which is spaced below the chamber's upper surface and generally above the passage for preventing backflow of fluid and bacteria. Fluid draining through the inlet tube drips first into the inlet chamber which is calibrated for accurate measurements, and can later be transferred to the storage chamber via the passage.

3,601,120
ULTRASONIC DOPPLER BODY SURFACE MOVEMENT DETECTOR
Harold Lee Massie, Trenton, N.J., assignor to Hoffmann-LaRoche Inc., Nutley, N.J.
Filed Apr. 14, 1969, Ser. No. 815,724
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 S **4 Claims**



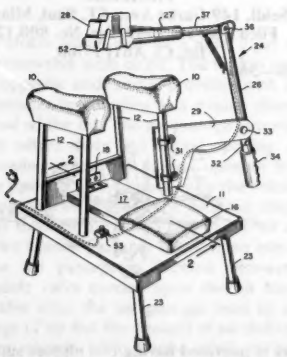
A device for utilization with an ultrasonic system for internal exploration of living organisms, enabling improved measurement of low blood pressure values by audible monitoring including modulating an audible tone frequency with the signals to be detected to generate a distinct audible signal rhythm which can directly be detected by human ear and distinguished from noise.

3,601,121
CONTOUR AID CUSHION VIBRATOR
Shephard D. Roberts, P.O. Box 136, Brevoort Station, Brooklyn, N.Y.
Filed Sept. 29, 1969, Ser. No. 861,727
Int. Cl. A61h *1/00*
U.S. Cl. 128—33 **3 Claims**



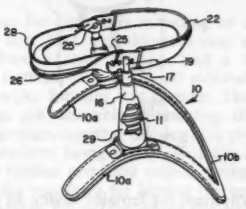
A contoured cushion incorporating a vibrator mechanism so to exercise the muscles of a person while reclined thereupon. The cushion is formed in two parts hinged together. The top of the cushion is contoured to fit the human body.

3,601,122
POSTURAL DRAINAGE ASSISTER
Gilbert J. Guertin, 39 Pembroke Road, Danbury, Conn.
Filed May 23, 1969, Ser. No. 827,231
Int. Cl. A61h *23/00*
U.S. Cl. 128—55 **8 Claims**



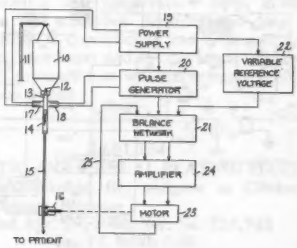
Supporting devices for comfortably positioning the head and shoulders of a human patient in diagonally inverted position to facilitate drainage of fluids from the patient's lungs. Relative adjustment of the supported positions of the head and shoulders and selective height adjustment of the overall assembly are provided, and a movable vibratory percussion arm positioned for operation and movement by the patient further aids in the treatment of the patient.

3,601,123
DYNAMIC CERVICAL SUPPORT
Harold A. McFarland, Salt Lake City, Utah, assignor to H. C. Burton, Bountiful, Utah, a part interest
Filed May 16, 1969, Ser. No. 825,295
Int. Cl. A61h *1/02*
U.S. Cl. 128—75 **13 Claims**



A cervical support wherein traction is constantly maintained even though the wearer has almost full normal mobility of his head and wherein increased traction can be readily obtained on a temporary basis. A head frame is universally connected to upwardly biased, telescoping members, the lower ends of which are adjustably fixed to the small ends of tapered springs. The large ends of the tapered springs are anchored to a shoulder harness. A removable and adjustable chin member cooperates with the head frame to provide full support for the wearer's head in an attitude of flexion or extension as necessary for best treatment of the wearer's cervical disease.

3,601,124
FLUID FLOW REGULATOR
Frank L. Petree, 387 Westmoreland, Idaho Falls, Idaho
Filed Aug. 29, 1968, Ser. No. 756,202
Int. Cl. A61m *5/00*
U.S. Cl. 128—214 **8 Claims**

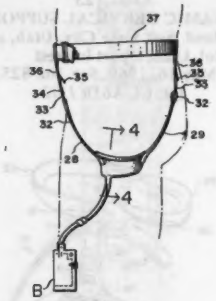


An intravenous fluid flow regulator wherein a clamp is motor operated to either constrict or open a tube in response to a rate reference signal and a fluid drop signal. A tube clamp is moved toward an unclamped position and a rate responsive to the rate reference signal and then is moved toward a clamping position in response to a fluid drop system.

3,601,125
BODY-WORN URINAL FOR FEMALES

David H. Moss, 10295 Collins Ave., Bal Harbour, Fla.

Filed May 23, 1969, Ser. No. 827,327
Int. Cl. A61f 5/44
U.S. Cl. 128—295 4 Claims

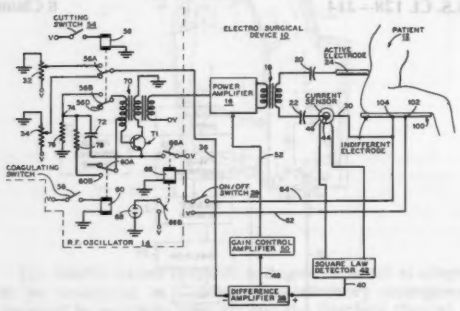


A body-worn urinal for females having an open pouch with a cylindrical member lined along its upper circumference with adjustable straps secured to the ends of the pouch and extending to a belt for positioning the pouch snugly against the flesh of the groins. The pouch having a drain pipe connected thereto and extending to a nozzle inserted into a funnel-shaped sheath and flutter valve forming the inlet of a disposable plastic bag. The nozzle is provided with an enlarged shoulder limiting the positioning of the nozzle in the flutter valve and upon wrapping the sheath about the nozzle with an O-ring slipped thereon against the shoulder a leakproof connection is effected. The plastic bag being placed in a pocket positioned on a garment worn by the person whereby a person may utilize the urinal while walking, sitting and standing as well as reclining.

3,601,126
HIGH FREQUENCY ELECTROSURGICAL APPARATUS

Jerry R. Estes, Boulder, Colo., assignor to Electro Medical Systems, Inc., Englewood, Colo.

Filed Jan. 8, 1969, Ser. No. 789,716
Int. Cl. A61b 17/36
U.S. Cl. 128—303.14 5 Claims

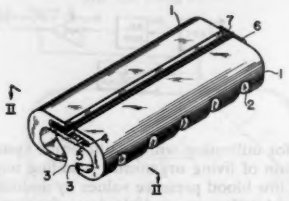


Electrosurgical apparatus including electrodes powered by high frequency electric current, wherein the amplitude of the current flowing through the circuit is monitored and compared with a reference amplitude so that the current source can be regulated to transmit power of a desired amplitude. Further, the waveform of the current can be selectively switched from a sinusoidal waveform to a pulsed waveform. Also, there is provided an indifferent or return electrode whose conductivity controls the operation of the power source.

3,601,127
SURGICAL CLAMP

Aaron N. Finegold, 1143 Shady Ave., Pittsburgh, Pa.

Filed Sept. 15, 1969, Ser. No. 857,696
Int. Cl. A61b 17/08
U.S. Cl. 128—337 3 Claims

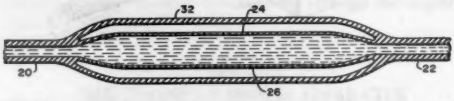


An adjustable clamp comprising a pair of substantially U-shaped clamp members having the edge of one leg formed with serrations and a continuous longitudinal groove formed in the other leg, a connector extending between the clamp members into the grooves and continuous longitudinal teeth formed on surfaces of the grooves and on surfaces of the connector to hold the clamp members in the desired position.

3,601,128
VENTRICULOATRIAL SHUNT ACCUMULATOR

Salomon Hakim, Carrera 13, No. 48—26, Bogota, Colombia

Filed Dec. 26, 1968, Ser. No. 786,928
Int. Cl. A61m 27/00; F16l 55/04
U.S. Cl. 128—350 3 Claims

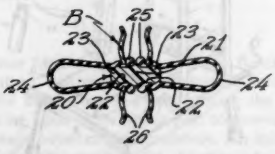


In a ventriculoatrial shunt, a fractional backflow of cerebrospinal fluid into the ventricular cavity is provided by a resilient accumulator chamber which responds to the pressure fluctuations of the cerebrospinal fluid. This backflow is effective to discourage clogging of the ventricular catheter by the choroid plexus, or other matter.

3,601,129
PACIFIER

Sharon A. Seidl, 149 Garbe Ave., ST. Paul, Minn.

Filed Feb. 18, 1969, Ser. No. 800,128
Int. Cl. A61j 17/00
U.S. Cl. 128—360 1 Claim



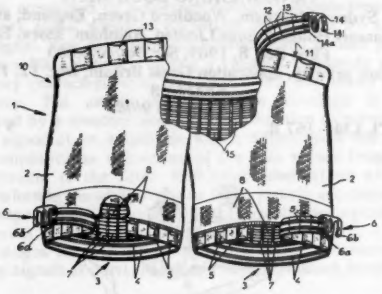
A pacifier is provided having two nipples supported on opposite ends of a supporting shank. One nipple serves as a handle when the other is in the infants mouth. Retaining discs hold the nipples secured to the shank.

3,601,130

UNDERGARMENT PROVIDED WITH ELASTIC-FIXING MEANS OF ADJUSTABLE LENGTH

Joseph Pepo Saltiel, Saint-Quentin, France, assignor to Wimbledon Organization Ltd., Luxembourg, Grand Duche du Luxembourg

Filed June 25, 1969, Ser. No. 836,401
Int. Cl. A41c 1/04
U.S. Cl. 128—535 1 Claim



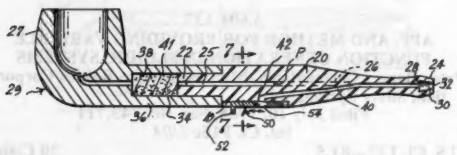
A panty comprising elastic-fixing means of adjustable length provided with retaining means ensuring frictional adherence and further provided with internal additional elastic means, located in the proximity of said adjustable elastic-fixing means, for imparting increased suppleness to said panty.

3,601,131

BIT FOR SMOKING ARTICLE HAVING SMOKE AND AIR PASSAGES

Eugene T. Reggio, 60 Hamilton Ave, Valley Stream, N.Y.

Filed Feb. 12, 1970, Ser. No. 10,945
Int. Cl. A24f 5/04
U.S. Cl. 131—198 A 10 Claims



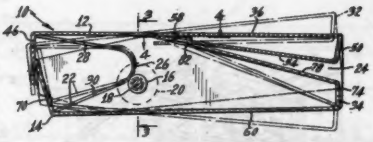
A smoking article which may be a pipe, cigar or cigarette holder has a removable stem or bit. The bit has a mouthpiece and tenon at opposite ends and is provided with separate air and smoke passages terminating at a mixing chamber at the mouthpiece end of the bit. The air passage extends from one side of the bit where there is a lateral opening. A movable slide valve member covers the lateral opening for adjusting the size of the opening and consequently the relative amount of air and smoke drawn through the bit. One smoke passage extends axially through the tenon end of the bit and is then divided into two branch passages which open into the mixing chamber. The air passage is located between the two branches. A slide valve carried upon the bit has a tapered opening operable over the air passage inlet to control not only the passage of air but the amount of air delivered. There is no mixture of air with smoke until it reaches the mouthpiece end of the bit, when it mixes, and cools and dilutes the hot smoke. The bit thus provides a cool and dry smoke.

3,601,132

CIGARETTE EXTINGUISHER

G. H. Etheridge, 6059 Hyde Park Circle, Jacksonville, Fla.

Filed May 12, 1969, Ser. No. 823,867
Int. Cl. A24f 13/18
U.S. Cl. 131—256 6 Claims



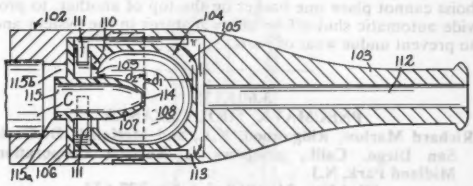
An extinguisher for cigarettes including an upper boxlike member having top, rear and sidewalls and a downwardly facing jawlike forward end portion, and a lower boxlike member having bottom, rear walls and sidewalls and an upwardly facing jawlike forward end portion. The extinguisher includes a hinge pin assembly connecting the upper and lower boxlike members together in operative pivotal relationship with the members being freely pivotable about the pin assembly and is further provided with a spring device positioned between the members for biasing the jawlike forward end portions together for extinguishing the lighted end of a cigarette placed therebetween.

3,601,133

TOBACCO SMOKE FILTERING DEVICE

William F. Van Eck, 228 Main St., East Haven, and Warren R. Jewett, Orange, both of, Conn.

Filed Mar. 3, 1969, Ser. No. 803,712
Int. Cl. A24d 01/04; A24f 07/04, 13/06
U.S. Cl. 131—261 B 27 Claims



This disclosure relates to a tobacco smoke filter which removes tars through condensation and precipitation. An inlet nozzle protrudes into a smoke expansion chamber of predetermined size. Smoke exits from the nozzle at high velocity and disperses and expands in the chamber with a resultant turbulence and temperature drop. Water vapor precipitates on the chamber surfaces and tars coalesce thereon. The filter is constructed and arranged to prevent blockage by coalesced tars and to operate within a predetermined range of pressure loss while efficiently removing tars from the tobacco smoke.

3,601,134

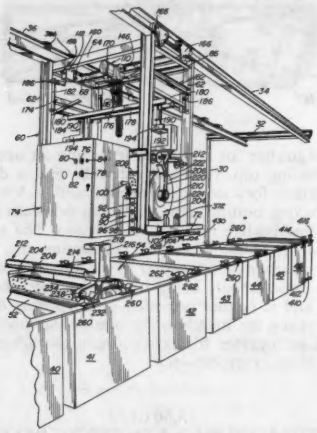
AUTOMATIC AND MANUAL PLATING MACHINE

Albert Benjamin, Skokie, Ill., assignor to Clinton Supply Company, Chicago, Ill.

Filed Apr. 29, 1968, Ser. No. 724,745
Int. Cl. B08b 3/06
U.S. Cl. 134—46 10 Claims

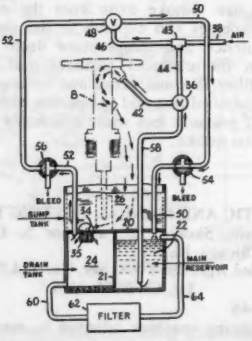
An electroplating machine adapted to move parts to be plated through one or more timed process steps sequentially or intermittently with either manual or automatic control as desired. In one embodiment, means are provided to sequentially engage, lift, convey, lower and release one or more baskets of parts to be plated through a series of metal preparation and electroplating baths. A longitudinally reciprocable carriage characterized by having a remotely controlled hoist, a cradle operated by the hoist to engage and disengage the parts baskets, which have means adapted to be

engaged by the carriage and also alignment means for placing the baskets into their proper position in each treating tank. A control panel is also provided whereby the electroplater controls the machine through a series of manually operated switches or as desired can place the machine on fully automatic and closely timed operation. Included in the electrical control system are means to actuate the various timed move-



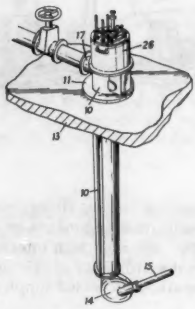
ments of the hoist through a punched tape for completely controlled programmed and automatic operation so that each motion or cycle or combination is precisely repeated to insure uniform operation and results. Means are provided to sense the presence of a basket in a treating tank so that the hoist cannot place one basket on the top of another, to provide automatic shut-off or safety features in the system and to prevent undue wear of parts.

3,601,135
PNEUMATIC TOOL CLEANER
Richard Marlow, Ridgewood, N.J., and McKenzie D. Cook, San Diego, Calif., assignors to Nortech Corporation, Midland Park, N.J.
Filed Nov. 21, 1968, Ser. No. 777,623
Int. Cl. B08b *9/00*
U.S. Cl. 134—102 **3 Claims**



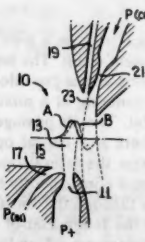
A device for cleaning pneumatic tools such as, paving breakers and jackhammers, comprising a cabinet structure provided with a shock absorbing mount to receive the tool and having its lower end divided into a main reservoir and a drain tank. A source of compressed air communicates with a hose connection to the air inlet of the tool, with the main reservoir, and with the drain tank, and includes suitable valving to direct the airflow into the reservoir where it pressurizes a cleaning solvent, causing it to flow through a conduit, into the hose connection through the tool and into the drain tank; or, to direct the airflow to the hose connection and through the tool to flush the dirt therefrom and to dry the interior thereof; or, to direct the airflow to the drain tank where it pressurizes the dirty solvent, causing it to flow through a filter and back into the main reservoir.

3,601,136
TANK-WASHING EQUIPMENT
James Sydney Marcham, Woodford Green, England, assignor to Samuel Hodge & Sons Limited, Rainham, Essex, England
Filed Dec. 8, 1969, Ser. No. 883,083
Claims priority, application Great Britain, Dec. 12, 1968, 59235/68
Int. Cl. B08b *9/08*
U.S. Cl. 134—167 R **9 Claims**



A tank-washing apparatus for use in tanker ships has a first part which is fixed in the tank and includes a rotatable turret with a swinging nozzle and a water turbine driven by the wash water supplied to the nozzle and a second part which is transferable from one first part to another and contains the transmission gear for driving the turret and nozzle from the turbine.

3,601,137
APP. AND METHOD FOR PROVIDING VARIABLE FUNCTION GENERATION IN FLUIDIC SYSTEMS
Peter Bauer, Germantown, Md., assignor to Bowles Corporation, Silver Spring, Md.
Filed July 10, 1968, Ser. No. 743,711
Int. Cl. F15c *1/04*
U.S. Cl. 137—81.5 **30 Claims**



Techniques are disclosed whereby fluid output signals are provided as selectively variable functions of fluid input signals. One technique employs a fluidic amplifier wherein a fluid output signal varies as a function of the deflection of the amplifier power stream and of the transverse velocity profile of the power stream, the function being rendered variable by

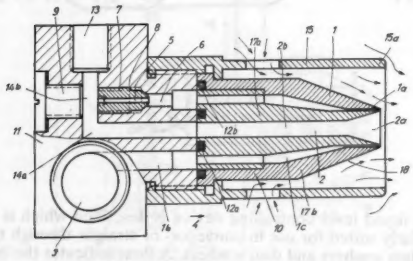
providing a fluid stream flowing adjacent to and in a direction opposite to the power stream whereby to selectively modify the power stream velocity profile. Alternatively, a substantially wedge-shaped wall is disposed adjacent the undeflected power stream with the apex of the wedge pointing generally transversely of the direction of the power stream. A command stream of fluid is directed so as to deflect the power stream against the upstream side of the wedge-shaped wall whereby the power stream bounces off the wall at an angle dependent upon the point at which the power stream impacts against the wall. A still further alternative comprises a fluidic circuit in which a variable pressure gain command signal is converted to a correspondingly variable-frequency oscillatory signal which is amplitude modulated by a fluid input signal. The amplitude-modulated signal is then passed through a filter network having a variable amplitude versus frequency characteristic in the range of the oscillatory signal frequency. The amplitude modulation envelope is then recovered by a detector and filter combination to provide an output signal at an amplitude which differs from the input signal amplitude as a function of the gain versus frequency characteristic of the filter. Still other alternatives are disclosed wherein variable pressure input signals are converted to correspondingly variable frequency oscillatory signals, the frequencies of which are varied in accordance with desired gain changes for the input signal and then reconverted to pressure signals at correspondingly varied pressure levels.

3,601,138

FEELER AND CONTROL DEVICE

Hansheinrich Glattli, Seestrasse 252, Kusnacht, and Jan Richard Peter De Fries, Allenmoostrasse 124, Zurich, both of, Switzerland

Filed June 19, 1969, Ser. No. 834,836
Claims priority, application Germany, June 20, 1968, P 17 74 446.6
Int. Cl. F15c *4/00*
U.S. Cl. 137—81.5 **10 Claims**



A feeler and a control device formed of a nozzle and a reflecting surface or plate determining the presence or absence on body surface within the control area includes a nozzle having an inner passage emitting an inner control jet and an outer passage surrounding the inner passage and terminating in an annular part of substantial length. Gas under pressure is supplied to both the passages. A signal device for measuring the pressure is connected to the inner passages.

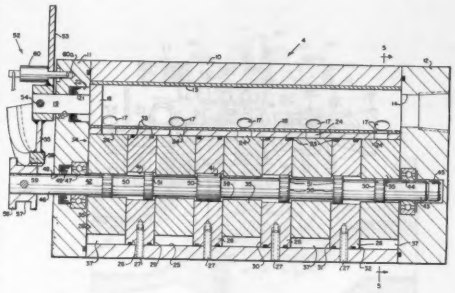
3,601,139

FLUID DISTRIBUTING APPARATUS

Edward S. Kontranowski, Bay City, Mich., assignor to Aerospace America, Inc., Bay City, Mich.

Filed Feb. 24, 1970, Ser. No. 13,330
Int. Cl. G05d *11/00*
U.S. Cl. 137—99 **13 Claims**

Apparatus for distributing fluid from a source thereof in predetermined volume to each of a plurality of fluid operated mechanisms comprises a body having a plenum chamber into which the fluid is admitted and from which the fluid passes into any one of a number of separate compartments in each of which is a rotary metering device operable in response to the admission of fluid thereto to enable a measured amount of fluid to be discharged therefrom. Valves are provided for selectively enabling or disabling the admission of fluid to any one or more of the compartments and adjustment of a valve to disable the admission of fluid to any compartment automatically effects disablement of the associated metering device.

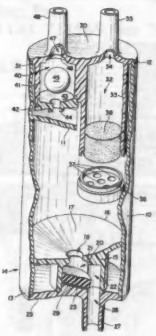


3,601,140

LIQUID TRAP

Robert Edward Hooper, Oakville, Ontario, Canada, assignor to Torginol Industries Incorporated

Filed June 3, 1969, Ser. No. 830,072
Int. Cl. F16t *1/18*
U.S. Cl. 137—107 **8 Claims**



Liquid trap for use in vacuum systems where liquid flow is induced by the application of a vacuum, for the purpose of preventing accidental flow of liquid to the vacuum source. The trap incorporates a chamber connected in the vacuum line, and having an automatic drain valve closed by the application of the vacuum and opening when the vacuum is terminated, the chamber being also provided with an additional safety valve closing the vacuum line if any small quantity of liquid should escape from the chamber into the vacuum line.

3,601,141

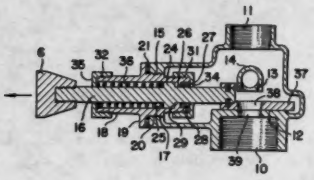
CHANGEOVER VALVE

Nobutoshi Kishu, Kitakyushu-shi, Japan, assignor to Toyo Toki Co., Ltd, Kitakyushu-shi, Japan

Filed Mar. 26, 1969, Ser. No. 810,480
Int. Cl. A47k *3/22*
U.S. Cl. 137—119 **1 Claim**

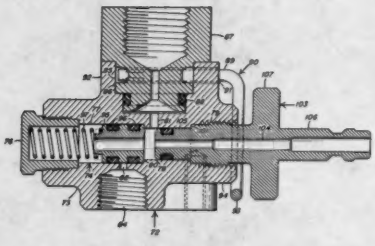
A valve casing is formed with at least one inlet, two outlets and a hole for receiving a liner member, and a valve seat having an opening is formed in a portion of the valve casing adjacent one of the outlets. A partition tube is formed integrally with the valve casing in communication with the inlet, the tube having an opening at the portion opposite to the open-

ing of the valve seat. An operating rod is supported by the liner member fitted in the liner hole, and a valve element provided with a through hole in alignment with the opening of the valve seat is fitted to the operating rod in such a way



as to be freely slidable over the valve seat. A spring maintains the valve element pressed at a point where the through hole of the valve element remains in alignment with the opening of the valve seat.

3,601,142
GAUGE-TESTING FITTING
Virgil L. Frantz, Salem, Va., assignor to Graham-White Sales, Salem, Va.
Division of Ser. No. 767,631, Sept. 15, 1968
Filed May 20, 1970, Ser. No. 39,074
Int. Cl. G01l *17/00*
U.S. Cl. 137—269 **4 Claims**



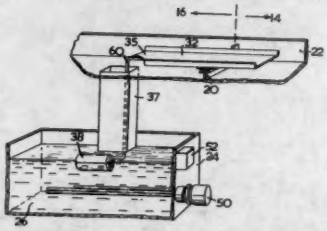
A fitting for mounting a pressure gauge or other pressure-sensing member for use in a testing system with a testing gun or other testing device. The fitting is ported for connection to a pressure line and is so valved and so locks the sensing member in place as automatically to disconnect the sensing member from the pressure line on and prevent unlocking of the sensing member except on removal of a plug normally closing the fitting's testing port.

3,601,143
VALVE SERVICE BOXES
Joseph T. Glennon, 127 Lincoln Ave., Elizabeth, N.J.
Filed Jan. 23, 1969, Ser. No. 793,424
Int. Cl. F16l *5/00*
U.S. Cl. 137—364 **7 Claims**

A valve service box comprises an erect telescopic pipe structure whose sections made of plastic having resilient quality, are in frictional engagement. The upper end of the upper section has a collar holding a closure plate. The lower section is provided with two aligned diametrically opposite keyhole-shaped notches, starting from its lower rim edge, so that upon downward movement of said pipe structure in a trench or excavation leading to a sunken valve interposed in a gas or water pipeline, the valve's inlet and outlet tubular members are entered in said notches respectively whereupon

the lower pipe section is snapped on to the plumbing, thus anchoring said lower section against upward movement.

3,601,144
LEVEL CONTROL DEVICE
William A. Hansen, Winnipeg, Manitoba, Canada, assignor to The Paul Moore Company Limited
Filed Sept. 16, 1969, Ser. No. 858,317
Int. Cl. F16k *31/26*
U.S. Cl. 137—386 **3 Claims**

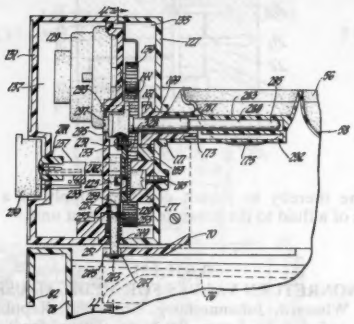


A liquid level controlling device is described which is particularly suited for use in conveyor- or straight-through types of glass washers and dish washers. A float indicates the liquid level of wash solution in a tank, and is operatively connected to a diverter trough which effects the transfer of liquid to the tank in response to an indicated low level, and from the tank in response to an indicated high level of wash solution. A simple mechanical linkage, or a fluid connection using an incompressible fluid or the like, is employed in order to cause a corresponding movement of the diverter trough to any movement of the float due to a change in the level of wash solution in the tank.

3,601,145
AUTOMATIC FREEZER
Charles W. Eyman, Jr., Dayton; Floyd O. Moody, Dayton, and Harold M. Snyder, Springfield, all of, Ohio, assignors to General Motors Corporation, Detroit, Mich.
Division of Ser. No. 774,786, Nov. 12, 1968, Pat. No. 3,540,227
Filed Jan. 28, 1970, Ser. No. 6,467
Int. Cl. G05d *9/12*
U.S. Cl. 137—408 **2 Claims**

In the preferred form an electric motor drives a large gear which operates a Scotch yoke type cam having an interrupted rack connected to it for turning an interrupted pinion which is operably connected to one end of a flexible mold for inverting and twisting the mold about the axis of a double

throw hydraulic thermostat switch. A commutator is provided on the large gear. Cooperating with this commutator and thermostat are spring contacts controlling the filling, freezing and ejection periods. One of these commutator contacts is pivoted into and out of contact with a wedge shaped contact by the movable bin carrier under the control of a



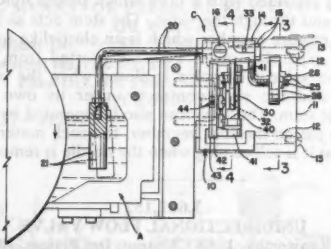
weak and stronger spring arrangement to stop the operation whenever the bin is removed or when it is filled to a measured amount. A manual adjustment moves this wedge shaped contact relative to this pivoted contact to vary the mass of frozen pellets or ice cubes which may be deposited in the bin before the operation is stopped.

3,601,146

LIQUID LEVEL CONTROL

Alan B. Reighard, Bay Village, and John Sharpless, Amherst, both of, Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed May 8, 1969, Ser. No. 822,878
Int. Cl. G05 *9/00*
U.S. Cl. 137—413 **7 Claims**



A device for sensing and controlling a liquid level in a reservoir or container. The device uses a counterbalanced sensing element in the form of a displacer adapted to enter the liquid through the surface and displace a certain volume thereof. The displacer is mounted on an arm of the lever, the lever being counterbalanced to respond to a liquid head. The lever also carries a switch-actuating mechanism which is moved in response to change in the liquid level so that the switch controls the supply of liquid to the reservoir to maintain the desired level.

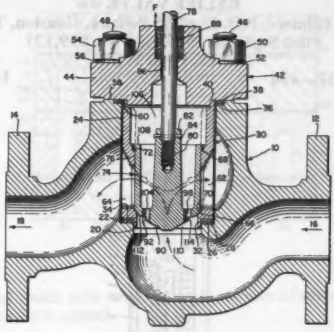
3,601,147

SEMIBALANCED PLUG VALVE

Edward B. Myers, Oreland, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 28, 1969, Ser. No. 811,433
Int. Cl. F16k *51/00*
U.S. Cl. 137—484.2 **1 Claim**

A semibalanced plug for a double seated cage valve having a bottom end surface thereof provided with a nonspinable inverted frustum-shaped surface, an annular recess formed in this surface and a plurality of the spaced-apart passageways extending from this annular recess to the top of the plug so that a low pressure fluid suction condition will be created along the recess that will effect a pulling action on the fluid



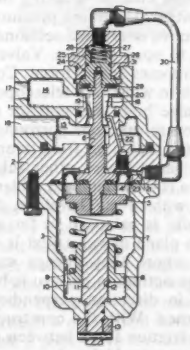
from the top to the bottom of the plug into the recess to thereby continuously reduce the pressure of the fluid acting on the top of the plug, the force that is required to move the plug to different operating positions and the size of the actuator that is required.

3,601,148

FLUID-PRESSURE-REGULATING VALVE DEVICE

William B. Jeffrey, Irwin, and William H. Reno, Monroeville, both of, Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

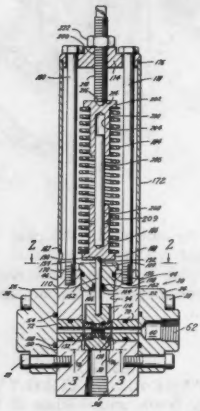
Filed Oct. 7, 1969, Ser. No. 864,358
Int. Cl. G05d *16/06*
U.S. Cl. 137—484.8 **1 Claim**



A fluid-pressure-regulating valve device including adjusting means for setting the device to deliver fluid at a selected pressure, piston-operated valve means for controlling and maintaining delivery of fluid at the preselected pressure level, the piston for operating said valve means being normally biased in one direction by an adjustable force for opening said valve means and being subject to supply fluid pressure acting thereon in opposition to said adjustable force for closing said valve means when the delivered pressure attains said preselected pressure sufficient for overriding said adjustable force venturi means in the supply communication for causing the pressure of supply fluid acting on the piston to be reduced to a lesser degree than the delivered pressure for thereby affecting the piston to maintain the valve means in its fully open position until the preselected pressure is attained,

and means for effecting balance of pressure on both sides of the valve means for rendering the piston more sensitive to any change in the degree of delivered pressure when the valve means is closed.

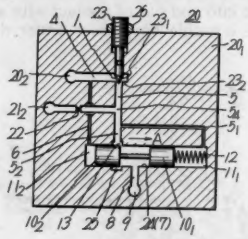
3,601,149
RELIEF VALVE
Samuel E. Gilmore, P.O. Box 265 Bellaire, Houston, Tex.
Filed Sept. 18, 1969, Ser. No. 859,121
Int. Cl. F16k *31/36*
U.S. Cl. 137—494 **12 Claims**



Valve closure means comprises conduit means movable in valve body between a closed position against a stop and an open position away from stop. Stem connected to conduit means extends through body to a spring that urges conduit means to closed position. Upstream pressure from inlet port in valve body is effective over cross-sectional area of stem to urge conduit means to open position. Valve opens when upstream pressure overcomes spring force. Conduit means has passage therethrough in which are telescoped tubes sealingly bridging between valve body and conduit means. In closed position of valve closure one tube surrounds outlet in valve body whereby outlet is sealed off from interior of valve body except over parallel area where other tube contacts valve body. The latter area is provided with a blank seat or a blind second seat to seal with tube. Therefore, downstream pressure acting on closure is balanced as far as components in direction parallel to plane of valve seat is concerned. Inner diameter of tubes where they engage carrier. Therefore, downstream pressure acting on closure is balanced as far as components acting in direction perpendicular to plane of valve seat is concerned. With the construction downstream pressure creates no friction force between closure and body and upstream pressure at which valve opens is independent of downstream pressure. Valve body has alternative outlet port beneath blank seat or blind second seat. Effective are of tubes subject to upstream pressure is such as to cause tubes to seal more tightly against seat means as upstream pressure increases so long as valve is in closed position.

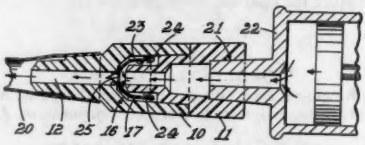
3,601,150
FLOW CONTROL VALVE
Akio Mito, Tokyo, Japan, assignor to Kabushikikaisha Tokyo Keiki Seizosho (Tokyo Keiki Seizosho Co., Ltd.), Tokyo, Japan
Filed Jan. 23, 1970, Ser. No. 5,294
Claims priority, application Japan, Jan. 27, 1969, Jan. 28, 1969, Jan. 27, 1969, 44/5899;44/7484;44/5900
Int. Cl. F16k *17/22, 31/163*
U.S. Cl. 137—501 **6 Claims**

A flow control valve having a branch duct line provided in a duct line interconnecting a flow control unit with a pressure adjustment unit, and a throttle inserted in the branch



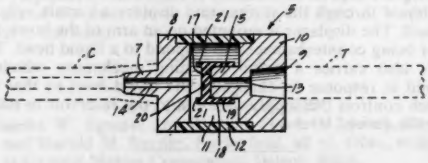
duct line thereby to permit constant supply of a suitable amount of a fluid to the pressure adjustment unit.

3,601,151
NONRETURN VALVES FOR MEDICAL USES
Ronald Winnard, Johannesburg, Transvaal, Republic South Africa, assignor to Latex Products (Proprietary) Limited, Johannesburg, Transvaal, Republic South Africa
Filed Jan. 8, 1968, Ser. No. 696,244
Claims priority, application South Africa, Mar. 29, 1969, 1810/67
Int. Cl. F16k *15/14*
U.S. Cl. 137—525 **1 Claim**



A medical valve used with arrangements to pass fluids into and from the body. The valve member is constituted by a chamber into which a stem portion protrudes, the stem portion being provided with a bore which passes fluid into the chamber and through the valve. The stem acts as a seat for the valve closure member which is an elasticlike sock which opens by expansion under pressure exerted from the stem side of the valve. The valve is closed when the pressure is removed and the sock contracts under its own elasticity around the stem. The valve can also be operated by causing a needle to pierce the sock member, the sock material is of a nature that it is self-sealing when the needle is removed.

3,601,152
UNIDIRECTIONAL FLOW VALVE
Grant F. Kenworthy, 1688 Chestnut, Des Plaines, Ill.
Filed Aug. 15, 1969, Ser. No. 850,436
Int. Cl. F16k *15/14*
U.S. Cl. 137—525 **7 Claims**



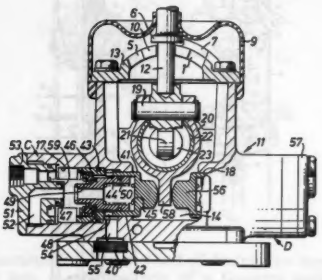
A nipple is engaged by a generally cup-shaped elastomeric one-way flow control member to block flow of fluid in reverse through the discharge end of the nipple but permits fluid flow from the discharge end of the nipple by elastic expansion of a nipple-embracing sleeve. During flow from the nipple the control member is retained in position relative to the nipple to enable quick resumption of reverse flow blocking engagement with the nipple.

3,601,153

GEAR CHANGE MECHANISMS

Wilbur Mills Page, and Ralph Coupland, both of Lincoln, England, assignors to Clayton Dewandre Company Limited, Lincoln, England

Filed Jan. 23, 1969, Ser. No. 793,456
Claims priority, application Great Britain, Jan. 26, 1968, 4,175/68
Int. Cl. F16k *11/18*; G05g *13/00*
U.S. Cl. 137—596.2 5 Claims



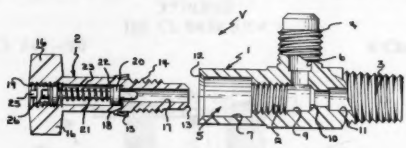
A manual control device for a fluid-pressure actuated gear change mechanism, said device comprising a hand lever, movable in at least two directions in a valve housing containing at least four valves, and a casing adapted to be secured to a gearbox and housing at least four cylinders, each of said cylinders being connected via one of said valves to a source of pressure fluid; wherein movement of the hand lever to a position to select a gear is effective to exhaust the pressure fluid from at least one of the cylinders and the pressure fluid acting on pistons in the remaining cylinders being effective to select the said gear and to maintain the hand lever in the selected bar position.

3,601,154

SEALING MEANS FOR PRESSURE RESPONSIVE VALVE OR VALVES

Henry William Der[illegible]r, Sr., Lebanon, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 23, 1968, Ser. No. 769,786
Int. Cl. F16k *17/04*
U.S. Cl. 137—612.1 10 Claims



A valve has a body provided with a passageway therethrough. A valve seal is located along the passageway. A valve member is movably disposed in the passageway, and it is provided with a valve head sealingly mateable with the valve seat and a unitary annular sealing skirt in sealing engagement with the section of the passageway along which it moves.

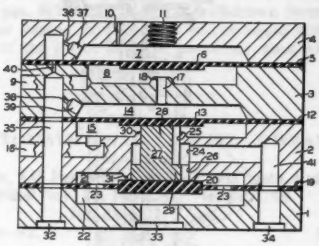
3,601,155

PNEUMATIC LOGIC VALVE DEVICE

Donald Brown, Monroeville, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Feb. 2, 1970, Ser. No. 7,892
Int. Cl. F16k *11/02*, *31/12*
U.S. Cl. 137—625.66 8 Claims

A pneumatic logic valve device characterized by a back pressure sensing arrangement for piloting rapid responsive operation of the device by closing a sensing port or "touch hole," said touch hole requiring a minimum of effort in closing or keeping it closed.

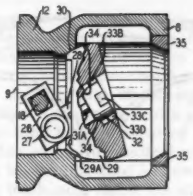


3,601,156

FLUID CONTROL VALVE

William C. Hookway, Jr., 5 Catalpa, Convent Station, N.J.

Filed May 4, 1970, Ser. No. 34,020
Int. Cl. F16k *31/52*, *1/16*
U.S. Cl. 137—630.14 11 Claims



An in-line fluid control valve for use over a wide range of fluid flow rate and fluid pressure requirements. The valve includes a movable main valve member having a spherically shaped segment. In operation, the main member simultaneously translates and rotates while being guided within a cylindrical cage formed by the inner faces of a plurality of riblike members interposed between the outer valve casing and the main valve member and disposed longitudinally with respect to the flow axis. Simple actuating linkage includes a clevis pivotally coupled to the main valve member or to a piston which extends through a cylindrical cavity in the main valve member to provide a pilot valve for facilitating opening and closing the valve under relatively high fluid differential pressure conditions.

3,601,157

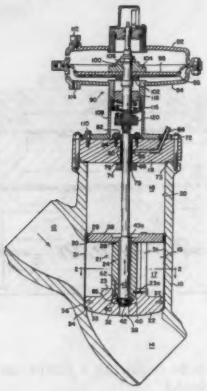
PRESSURE BALANCED VALVE

Bertram J. Milleville, Pittsburgh; Ralph W. Tartaglia, Bethel Park, and Harry E. Eminger, Valencia, all of, Pa., assignors to Rockwell Manufacturing Company, Pittsburgh, Pa.

Filed Feb. 17, 1969, Ser. No. 799,692
Int. Cl. F16k *11/14*
U.S. Cl. 137—630.14 9 Claims

A pressure-balancing valve construction in which upstream line pressure is used to maintain a main valve closure member in a closed position. An auxiliary valve connected to the valve stem and positioned within the main valve is first opened to balance the pressures across the main valve before the main valve is opened through a lost motion connection

between it and the stem. The critical valve components, i.e., the main valve and auxiliary valve closure members, are



readily removable to permit quick and economical repair of the overall valve assembly.

3,601,158

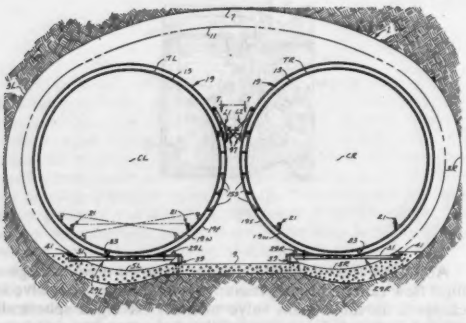
HIGH-SPEED GROUND TRANSPORTATION SYSTEM

Lawrence Knight Edwards, Palo Alto, Calif., assignor to Tube Transit Corp., Palo Alto, Calif.

Filed Feb. 27, 1970, Ser. No. 15,057

Int. Cl. F16l *3/08, 5/00*

U.S. Cl. 138—106 **26 Claims**



A spring suspension for a pair of tubes of a high-speed ground transportation system, each tube having rails for travel therethrough of a wheeled vehicle. The tubes extend side-by-side normally through a tunnel with a space between the tubes. Each tube is supported for vertical springing on a resilient bed comprising a series of resilient crossbeams, and for horizontal springing by means of a laterally resilient keel underneath the tube bearing on the crossbeams, the keel being laterally adjustable on the crossbeams. Two sets of adjustable-length spring compression links are interposed between the tubes, the links of the two sets being oppositely inclined, and alternating with one another along the length of the tubes.

3,601,159

TUBULAR MEMBRANE AND MEMBRANE SUPPORT MANUFACTURING PROCESS

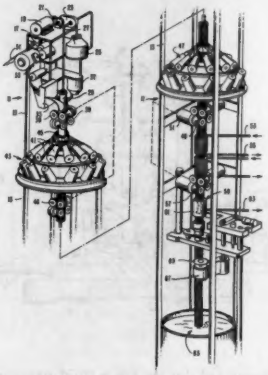
Murray Marks, Los Angeles; Harry A. King, Covina, and Paul A. Longwell, San Gabriel, all of, Calif., assignors to The United States of America as represented by the Secretary of the Interior

Filed Feb. 7, 1968, Ser. No. 703,776

Int. Cl. F16l *9/14*

U.S. Cl. 138—141 **3 Claims**

Reverse osmosis tubes, and a method for forming them including the steps of: wrapping a porous paper strip about a mandrel; sealing the porous paper strip at its edges to form a porous paper tube; moving the porous paper tube along the mandrel; winding resin-impregnated glass fibers over the outer surface of the moving tube to produce a porous glass fiber coating; heating the glass fiber coating to cure the resin as it moves with the tube; cooling the glass fiber coating; coating the inner surface of the moving porous paper tube



with a thin layer of reverse-osmosis-membrane-forming solution; drawing a slight vacuum around the outer surface of the porous glass fiber coating in an area overlapping the axial position where the membrane-forming solution is applied, causing the membrane-forming solution to closely adhere to the inner surface of the porous paper tube; and, immersing the coated porous paper tube in a gelation bath to gel the film to a useable membrane state.

3,601,160

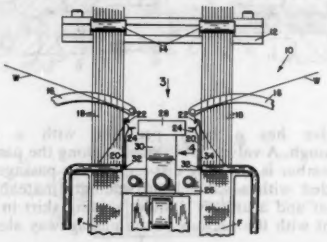
MAGNETIC LATCH HOLDING MEANS FOR A SELVAGE KNITTING NEEDLE IN A NARROW WARE LOOM

Ashokkumar S. Chetty, Worcester, Mass., assignor to Crompton & Knowles Corporation, Worcester, Mass.

Filed Sept. 11, 1969, Ser. No. 857,093

Int. Cl. D03d *47/42*

U.S. Cl. 139—124 A **5 Claims**

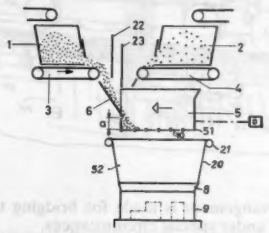


A holding means for the latch of a reciprocating selvage knitting needle in a narrow ware needle loom in which the knitting needle has a hook and a latch movable between an open position and a closed position with respect to the hook. The holding means is a magnet positioned for reciprocation with the knitting needle and positioned adjacent to the latch for holding the latch in the open position.

3,601,161
METHOD AND APPARATUS FOR DOSING TWO TYPES OF MOLDING SAND INTO THE MOLDING BOX OF A FOUNDRY MOLD

Erwin Buhrer, Breitenaustrasse 164, and Emil Maurer, both of Schaffhausen, Switzerland

Filed July 9, 1968, Ser. No. 743,399
Claims priority, application Switzerland, Aug. 16, 1967, 11,509/67
Int. Cl. B22c 5/12
U.S. Cl. 141—9 21 Claims

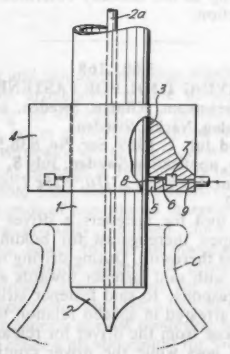


An apparatus for, and method of dosing two types of molding sand into a molding box of a foundry mold disposed beneath an intermediate container placed between a respective discharge device for each type of molding sand and the molding box. A relative movement occurs between at least one of the discharge devices and the intermediate container in order to continuously deposit a layer of a first type of molding sand into and substantially throughout the entire length of the intermediate container and with a width substantially corresponding to the width of the intermediate container. Then with a shift in phase there is simultaneously or during a further relative movement between the intermediate container and the discharge device continuously deposited into the intermediate container a layer of the second type of molding sand substantially over the entire length of the first layer of molding sand and with a width substantially corresponding to that of the intermediate container. The intermediate container is then brought into alignment with a filling frame placed upon the molding box and thereafter the contents of the intermediate container are emptied.

3,601,162
WIPER

Victor John Page, Saltdean, England, assignor to Neumo Limited, Peacehaven, Sussex, England

Filed Aug. 4, 1969, Ser. No. 847,212
Claims priority, application Great Britain, Aug. 7, 1968, 37703/68
Int. Cl. B65b 3/04
U.S. Cl. 141—90 6 Claims

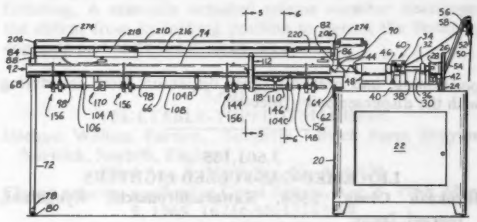


Wiping apparatus for use with a tubular probe for filling containers with liquids comprising a wiper block formed with a bore within which the probe is slidable, the block being formed with a plurality of radially inwardly directed jets opening into the bore which jets are connected to a source of pressurized gas, usually air. The probe is closed at its lower end with an enlargement into which the jets open and preferably also the block is formed with an annular chamber disposed radially outwardly of and in fluid communication with the jets, the chamber being connected to the source of pressurized gas. When the probe is withdrawn from a filled container, air issuing from the jets forces liquid adhering to the outside of the probe into the container, thus wiping the probe clean.

3,601,163
SEMIAUTOMATIC CHAIN LINK FENCE WEAVING MACHINE

Peter H. Ellis, 545 Parkway Apt. 18, Chula Vista, Calif.

Filed Nov. 18, 1969, Ser. No. 877,704
Int. Cl. B21f 27/04
U.S. Cl. 140—92.7 8 Claims



Chain link fence weaving apparatus includes manually shuttled shaft mounted for reciprocation along its longitudinal axis and also rotatable thereabout, a handle extending laterally from the shaft for use in moving the latter. Wire bent into zigzag shape is advanced into a guide tube parallel with the shaft, this tube being formed of two concave sections hinged together along longitudinal edges thereof. One section of the tube is swung toward and away from the other section by rotating the handle about the shaft. Movement of the shaft along its axis causes it to rotate between two angular positions, in one of which a first set of hooks on the shaft engage chain link fabric held between the longitudinal edges of the tube sections and in the other of which a second set of hooks on the shaft engage the fabric. Thus, the fabric is permitted to move upwardly from the tube when the movable section of the latter is swung away from the fixed section, but one set of hooks always limits the distance the fabric moves. Shaft is shuttled after each strand of fabric wire is woven so that the next strand will engage the fabric. A switch on the handle initiates feed of fabric wire into the tube, and a switch inside tube stops feed when the wire reaches a predetermined point.

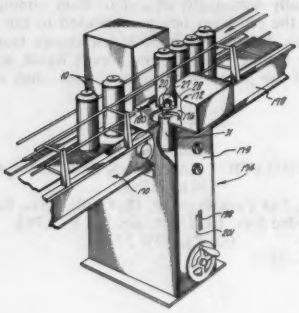
3,601,164
APPARATUS FOR INJECTING PROPELLANT INTO A DISPENSING CONTAINER

Roger K. Bruce, Costa Mesa, Calif., assignor to Sterigard Company, Burbank, Calif.

Continuation-in-part of application Ser. No. 638,114, May 12, 1967, now abandoned. This application Mar. 3, 1969, Ser. No. 813,794
Int. Cl. B65b 31/08
U.S. Cl. 141—20 6 Claims

An apparatus for injecting propellant into a dispensing container has a ram which advances a cylinder toward the container to be injected through a fluid coupling provided by propellant in a propellant chamber. A normally closed injector valve is mounted on the cylinder and opens by engagement with a dispenser to be filled to communicate the interior of the dispenser through an axially hollow injection needle with the propellant chamber. The volume of the propellant chamber is varied by varying the stroke of the ram. Propellant injection is accomplished in conjunction with an index-

ing star wheel and control means which accurately positions each dispenser for injection, prevents operation until such



positioning, and prevents other dispensers from interfering with the dispenser being injected.

3,601,165

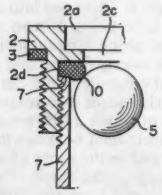
LIQUEFIED-GAS-FUELED LIGHTERS

Hirokazu Obata, 5588, Kawarashiromachi, Ryugasaki, Ibaragi, Japan

Continuation-in-part of application Ser. No. 508,722, Nov. 19, 1965, now abandoned. This application June 24, 1968, Ser. No. 747,065

Int. Cl. B65b *1/04, 3/04*

U.S. Cl. 141—302 **9 Claims**



Cigarette lighter tanks are here equipped with novel valves for refilling the tanks with liquefied gas such as butane. The nozzle of a supply container presses a movable valve member away from an O-ring valve seat, initially allowing gas to vent from the tank. Then the nozzle bears against a fixed part of the valve, opening the valve in the supply container and allowing the tank to fill. The O-ring is squeezed between an outer flange and an inner tube, giving it a tensioned surface that guards against leaks by ejecting dirt particles to which the valve is exposed. The outer flange overlies the outer side of the O-ring, protecting the O-ring from thrust engagement by the filling nozzle. In a preferred valve, the movable valve member is a ball, the outer flange is immediately adjacent the tank exterior, and there is no dirt cover.

3,601,166

WORK FEED SLAT CONVEYOR FOR A SAW

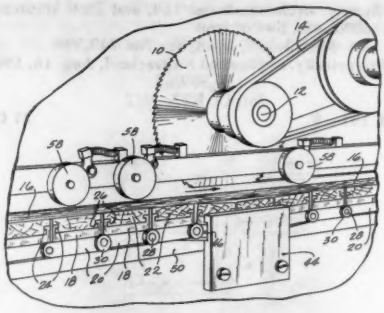
Walter J. Kohler, III, Kohler, Wis., assignor to Kohler General, Inc., Sheboygan Falls, Wis.

Filed May 12, 1969, Ser. No. 823,777

Int. Cl. B27b *25/04*

U.S. Cl. 143—49 **5 Claims**

Work is held normally level as advanced past a tool such as a saw, while the supporting slats (other than those carrying propelling dogs) are cammed down to a level below the teeth



of the tool. Arrangement is made for bridging the normally depressed area under special circumstances.

3,601,167

MOTOR SAW CHAIN WITH COMPLETE TOOTH LINKS

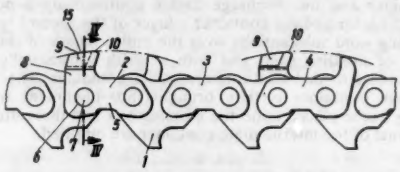
Hans Dolata, Waiblingen-Neustadt, Germany, assignor to Andreas Stihl Maschinenfabrik, Waiblingen-Neustadt, Germany

Filed Sept. 25, 1968, Ser. No. 762,405

Claims priority, application Germany, Sept. 27, 1967, P 16 28 916.0

Int. Cl. B27b *33/14*

U.S. Cl. 143—135 **1 Claim**



A tooth link for a motor saw chain which comprises a plate section having bores therethrough for receiving bolt means for the pivotal connection of the complete tooth link with other links of a motor saw chain, and a roof section merging with the respective adjacent outer lateral surface of the complete tooth link through a rounded longitudinal edge portion, said rounded portion extending over more than a quarter of a circle, said roof section having a cutting edge extending at least up to the laterally outermost mantle line of said rounded section.

3,601,168

DRIVING TOOL FOR FASTENERS

Gustaf Harry Fernstrom, Klinten, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed July 2, 1969, Ser. No. 838,515

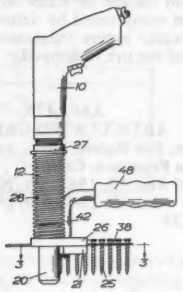
Claims priority, application Sweden, July 8, 1968, 9364/68

Int. Cl. B25b *23/10;* **B25c** *1/00*

U.S. Cl. 144—32 **8 Claims**

In a driving tool for fasteners a driver has guide jaws releasably clamped thereagainst for holding a fastener in frontal alignment therewith. During driving movement of the driver together with said fastener towards a workpiece, the guide jaws, in response to said fastener striking against the workpiece, are arrested in spaced relation to the workpiece and knocked loose from the driver for releasing the fastener from the guide jaws while the driver continues its driving movement. The driving tool may be provided with a magazine for band-supported fasteners, which by an ejector are forced to break out laterally one by one from the band in between the guide jaws and by a feeder are moved together

with the band one after the other to the ejector, said ejector and feeder being pivotally supported on a rocker member



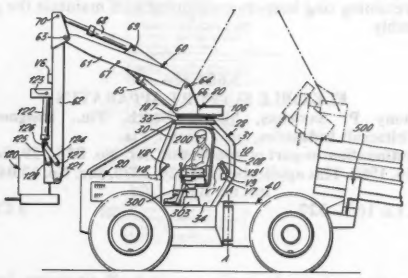
such as to alternately actuate the fasteners as the arm is rocked alternately in one direction and the other.

3,601,169

TREE-HANDLING VEHICLE

Douglas D. Hamilton, Mount Royal, Quebec, and Joseph J. R. Boivin, Montreal, Quebec, both of, Canada, assignors to Canadian International Paper Company; Quebec North Shore Paper Company, Montreal, Quebec and Abitibi St. Anne Paper Ltd, Beupre, Quebec, Canada

Filed Sept. 17, 1968, Ser. No. 760,274
Claims priority, application Canada, Sept. 22, 1967, 000,751
Int. Cl. A01g *23/02*
U.S. Cl. 144—34 R **11 Claims**



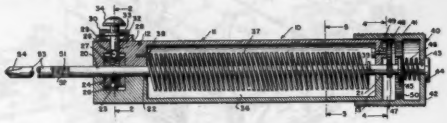
A tree felling and skidding machine which includes a self-propelled mobile articulated vehicle having a cab on one chassis providing an enclosed and protected area for the operator with a boom pivotally mounted on the roof of the enclosure and vertically above the operator for continuous pivotal movement through a 360° arc. A bunk on the other chassis is operable from the cab selectively to engage and release the butt ends of logs placed thereon. The operator is supported on a pivotally mounted chair or seat having hydraulic control valves for use in manipulating the boom and accessories mounted thereon. A power source on the front chassis provides fluid pressure for the hydraulic components and is conducted through a pair of rotary couplings, one of which provides a pivotal mounting for the operator's support and the other a pivotal mount for the boom assembly on the roof of the cab. Attached to the free end of the boom is a felling head consisting of a grapple and shear mechanism rigidly attached to a frame and each having movable jaws for engaging a tree at positions spaced longitudinally therealong.

3,601,170

SPRING-DRIVEN TOOL

Peter D. Sciascia, 3 Parkview Road, Woburn, Mass., and Sing C. Chin, 22 Muriel Road, Chelmsford, Mass.

Filed Apr. 29, 1969, Ser. No. 820,187
Int. Cl. B25g *1/00;* **B25b** *21/00*
U.S. Cl. 145—66 **5 Claims**



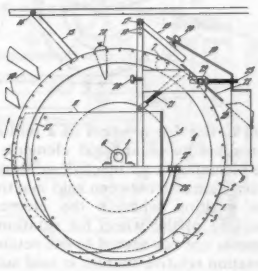
A tool for rapidly rotating threaded fastenings such as machine screws and nuts, utilizing a spring as a power source for revolving the fastening engaging part of the tool. A detent automatically locks the part driven by the spring against rotation while applying torque manually to the tool for initially loosening a fastening or for effecting the final tightening of a fastening. A manually actuated release member disengages the detent from its locking position to permit the fastening engaging part to be revolved by the spring.

3,601,171

VEGETABLE-TOPPING MACHINE

Michael William Farrow, "Seagavin," Brick Farm Drayton Norwich, Norfolk, England

Filed Apr. 8, 1969, Ser. No. 814,420
Claims priority, application Great Britain, Apr. 8, 1968, Mar. 5, 1969, 16716/68;11763/69
Int. Cl. A23n *15/04*
U.S. Cl. 146—81 R **8 Claims**



A machine for topping vegetables such as carrots in which the vegetables are delivered to the outside of a rotating cage formed with spaced circumferential bars through which undersize vegetables fall onto a chute interiorly of the cage for discharge while oversize vegetables are aligned and trapped between the bars and then passed across a cutting knife which severs the tops and the topped vegetables are then pressed out from the bars.

3,601,172

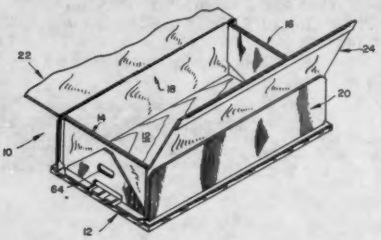
COLLAPSIBLE WEATHERPROOF TRAY OR BASKET FOR CROPS AND THE LIKE

Maurice A. Bourquin, Granby, Conn., assignor to The M. A. B. Machine Corporation

Filed Sept. 26, 1969, Ser. No. 861,352
Int. Cl. B65d *11/18*
U.S. Cl. 150—50 **7 Claims**

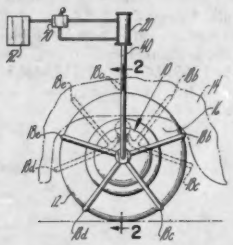
Collapsible basket in the form of a rectangular tray especially useful in harvesting of fragile crops such as leaf tobacco. Bottom wall of rigid plywood has side and end walls of composite structure, including panels of plastic laminate and canvas, the canvas serving to hinge sidewalls to bottom and, optionally, being extended to form flexible top closure flaps. End walls have triangular plastic laminate panels secured to canvas and defining the fold lines along which canvas may be folded inwardly to collapse empty basket. End walls have

supplemental plastic laminate flaps separately hinged to bottom wall to be swung into reenforcing position against the inner surface of the end walls when basket is erected, thereby



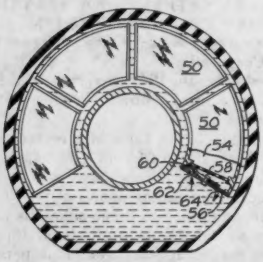
holding basket in open position. Bottom wall has flanges on all four sides extending beyond side and end walls will carry vertical loading when several filled baskets are stacked for storage or transportation.

3,601,173
AUTOMATIC ANTISKID DEVICE
Richard Edgar Anderson, 365 Arch St., New Britain, Conn.
Filed July 10, 1969, Ser. No. 840,716
Int. Cl. B60c *27/14*
U.S. Cl. 152—214 **12 Claims**



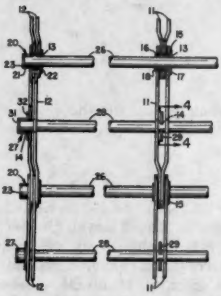
An antiskid device for a wheel of a motor vehicle or the like having a plurality of antiskid elements and means for retaining the elements in an inactive or storage position and for moving the elements between said inactive and an active or operative position wherein the elements engage the peripheral surface of the wheel for rotation therewith. The antiskid elements are connected to the retaining and moving means for rotation relative thereto in said active position and are movable into and out of operative engagement with the wheel without jacking the vehicle or otherwise raising the wheel above ground level.

3,601,174
MEANS FOR DAMPING BOUNCE IN VEHICLE TIRES
Daniel B. Shotwell, Washington, and James C. Barton, Peoria, both of, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Sept. 10, 1969, Ser. No. 856,617
Int. Cl. B60c *5/00*
U.S. Cl. 152—331 **10 Claims**



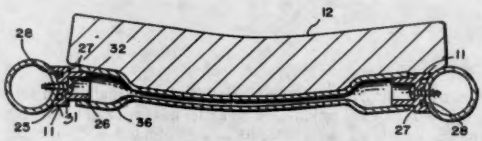
A vehicle tire is inflated with water and is associated with one or more hollow vessels of rigid construction each containing a compartment for a gas such as air, the compartment having at least one flexible wall. The vessels have ports which admit water when the tire is compressed as in bouncing or riding over an object in the road. Some of the ports may be valved to prevent escape of water so expansion of the air, after it has been compressed by deformation of the flexible wall when the water enters the vessel, is retarded and the normal bounce of the tire is damped.

3,601,175
ARTICULATED GRILLE
Russell Wardlaw, San Rafael, Calif., assignor to The Cookson Company, San Francisco, Calif.
Filed Aug. 18, 1969, Ser. No. 850,710
Int. Cl. E06b *9/01, 9/02*
U.S. Cl. 160—133 **4 Claims**



Articulated grille has identical links arranged in pairs as end links and intermediate links. Spoollike connectors loosely unite ends of intermediate links and hatlike connectors unite the end links and receive horizontal link-connecting rods loosely therethrough. Link-positioning rods extend through medial holes in the links and hat-shaped end keepers and retaining ring keepers positioning rods maintain the grille assembly.

3,601,176
FLEXIBLE SUPPORT APPARATUS
Anthony P. Savickas, Miami Beach, Fla., assignor to Whitecraft Industries, Inc., Miami, Fla.
Continuation-in-part of application Ser. No. 858,329, Sept. 16, 1969. This application Feb. 20, 1970, Ser. No. 13,047
Int. Cl. B25g *1/04*
U.S. Cl. 160—327 **3 Claims**

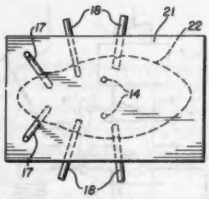


A cushion-supporting flexible apparatus for chairs, lounges and other furniture having a pair of spaced-apart crossmembers with a plurality of flexible members constituting the cushion-supporting flexible apparatus extending between the crossmembers. Each of the flexible members consisting of an elongated resilient hollow member having cylindrical end portions and a flattened arcuate cross section therebetween upon which the cushion rests. Cylindrical fittings are fastened to the crossmembers at one end portion and the other end is telescopically received by the hollow cylindrical end portions of flexible members so that when a person sits on the cushion, the elongated resilient members are flexed downwardly as their end portions slide in a direction away from the crossmembers without becoming disengaged therefrom.

3,601,177
PROCESS FOR DUPLICATING NATURAL OBJECTS

Robert C. Hall, Box 544, Rollinsville, Colo.

Filed Jan. 31, 1969, Ser. No. 795,523
Int. Cl. B22c 7/00
U.S. Cl. 164—45 6 Claims

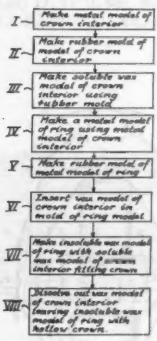


A method for producing copies of natural objects including the steps of applying an electricity-conducting coating to a specimen natural object, electrolytically plating a metal shell about the object, attaching auxiliary mounting or fastening element to said object either after or before said plating step, development of a flexible mold element on the surfaces of the plated natural object, and subsequently utilizing said flexible mold in connection with conventional casting operations to obtain one or more copies of the natural object. Fine features of the natural object are simulated by separately applied components or decorations.

3,601,178
METHOD OF MAKING A WAX MODEL OF A RING WITH HOLLOW CROWN

Gaston Marticorena, 316 W. Madison Ave., Dumont, N.J.

Filed Nov. 3, 1969, Ser. No. 873,575
Int. Cl. B22c 7/02
U.S. Cl. 164—45 9 Claims


I Make metal model of crown interior
II Make rubber mold of model of crown interior
III Make soluble wax model of crown interior using rubber mold
IV Make a model model of ring using metal model of crown interior
V Make rubber mold of metal model of ring
VI Insert wax model of crown interior in mold of ring model
VII Make insoluble wax model of ring with soluble wax model of crown interior filling crown
VIII Dissolve out wax model of crown interior leaving insoluble wax model of ring with hollow crown.

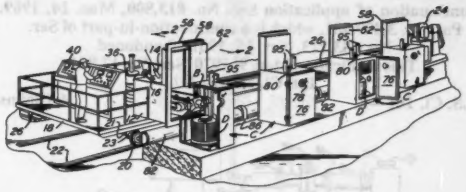
A hard, relatively insoluble wax form of jewelry such as a finger ring with hollow, framelike crowns is made by first making a metal model of the interior of the crown. A mold is made from the metal model and a soluble wax model of the interior of the crown is then cast by use of the mold. A metal model of the crown is then used in making a metal model of the ring with the metal model of the crown filling the crown of the model of the ring. A mold is made of the metal model of the ring. The soluble wax model of the crown interior is then inserted in the mold of the ring and then relatively insoluble wax is poured into the mold. The wax cast of the model of the ring is then removed from the mold and the wax form of the crown interior is dissolved out.

3,601,179
MULTICHAMBER DIRECTIONAL SOLIDIFICATION VACUUM CASTING FURNANCE

Kendrick C. Taylor, Erdenheim, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Jan. 23, 1970, Ser. No. 5,245
Int. Cl. B22d 27/16
U.S. Cl. 164—254 10 Claims

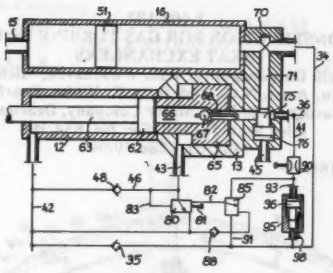
A vacuum melting and casting apparatus for directional solidification of metallurgical castings which employs a single traveling melting chamber and a plurality of molding chambers. By successively coupling the melting chamber with one of the mold chambers at a time, the cast components may be melted and poured under vacuum and thereafter cooled in mold chambers under isolated vacuum conditions so that the melting equipment is not retained in an inactive status during the relatively long directional solidification cycle.



3,601,180
PRESSURE-CASTING MACHINE

Alfred Nef, and Siegfried Erhard, both of Uzwil, Switzerland, assignors to Gebrueder Buehler AG, Uzwil, Switzerland

Filed Sept. 24, 1969, Ser. No. 860,557
Claims priority, application Switzerland, Sept. 30, 1968, 14609/68
Int. Cl. B22d 17/10
U.S. Cl. 164—315 11 Claims



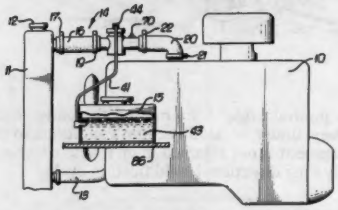
A pressure casting machine includes a chill mold, mold-closing means, a filling bush opening into the mold and a pressing ram displaceable in the filling bush. A hydraulic pressing unit is associated with the ram and includes a shot cylinder, a hydraulically operated shot piston, and a multiplier cylinder connected with the shot cylinder and having a multiplier piston which is hydraulically loadable on both sides and hydraulically connectable to the shot piston. An accumulator is chargeable by a pressure medium source, and hydraulic components interconnect the pressure medium source, the accumulator, the shot cylinder and the multiplier cylinder. A hydraulic line connects the multiplier cylinder, on the side of the multiplier piston facing the pressing ram, to the pressure medium source. An overflow valve is interposed in this line and is adjustable as to operating pressure. A controllable shutoff valve is connected to the overflow valve and acts as a precontrol for the overflow valve. The overflow valve is in the range of influence of the hydraulic pressure effective on that side of the shot piston facing away from the pressing ram. A switching device, operable in dependence on the pressure, is in controlling connection with the shutoff valve and operative to effect hydraulic connection of the multiplier piston and the shot piston in accordance with the operating pressure of the overflow valve and within the pressure range limited by the accumulator. The pressure-responsive control means may be purely hydraulic or may be a combination of electrically and hydraulically operated components.

3,601,181

METHOD AND APPARATUS FOR PURGING AIR FROM INTERNAL COMBUSTION ENGINE COOLING SYSTEMS

Walter C. Avrea, Placentia, Calif., assignor to Saf-Gard Products, Inc.

Continuation of application Ser. No. 813,800, Mar. 24, 1969, Pat. No. 3,499,481, which is a continuation-in-part of Ser. No. 683,223, Nov. 15, 1967, abandoned
This application Mar. 9, 1970, Ser. No. 17,844
Int. Cl. F01p *11/02*
U.S. Cl. 165—1 6 Claims



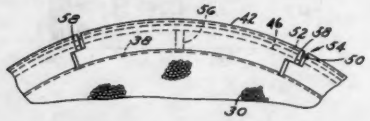
A pressurized cooling system for a conventional internal combustion engine, wherein the cooling system includes an overflow passage communicating with the highest point in the radiator system in which there is an outflow check valve so that liquid expansion unseats the check valve and excess liquid passes through a passage to an accumulator tank; and when the radiator system cools and a low pressure suction condition is created, the liquid in the tank is drawn back through the same passage through a second check valve which opens inwardly toward the radiator to allow the liquid to be returned to the radiator.

3,601,182

RIM CONSTRUCTION FOR GAS TURBINE ROTATING HEAT EXCHANGERS

Vemulapalli Durganageswar Rao, Woodhaven, Mich.; John J. Trudeau, Avon, N.C., and Jerry E. White, Dearborn Hts., Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sept. 2, 1969, Ser. No. 854,398
Int. Cl. F28d *19/00*
U.S. Cl. 165—9 14 Claims



Inserts of low-friction material such as boron nitride or graphite are positioned in an undercut on the periphery of a circumferentially continuous disc type regenerator and are bonded to the regenerator by a resilient adhesive such as a silicone rubber. The inserts preferably protrude beyond the outer circumference of the regenerator and the adhesive is applied to the outer circumference and the projecting surface of the inserts. Joints at the ends of the inserts attach the inserts together to form a substantially continuous rim capable of absorbing thermal expansion without opening radial leakage paths.

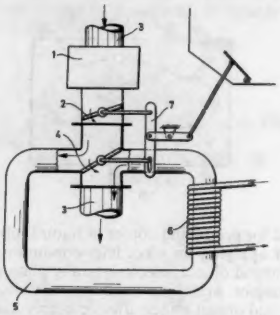
3,601,183

DEVICE FOR HEATING GAS MIXTURES

Ingolf Ottomar Eugen Lohner, 33 Flatowstrasse 8,, Braunschweig; Endre Jeno Tary, 318 Graf Bernadatte-Weg 1,, Wolfsburg; Eckhart Hoffmann, 3183 Rischfeldweg 5,, Fallersleben, and Hermann Eckhard Kiefer, 318 J. F. Kennedy Allee 78, Wolfsburg, all of, Germany

Filed Sept. 17, 1969, Ser. No. 858,806
Claims priority, application Germany, Sept. 20, 1968, P 17 76 096.2
Int. Cl. B60h *1/00*
U.S. Cl. 165—35 6 Claims

A device for the intensive and regulated heating of gas mixtures in a suction tube having a carburetor located therealong, the suction tube being connected to an engine and the device comprising a bypass tube connected with the suction tube, means associated with the bypass tube to heat the gas mixture passing therethrough, and flap valve means located in the suction tube.

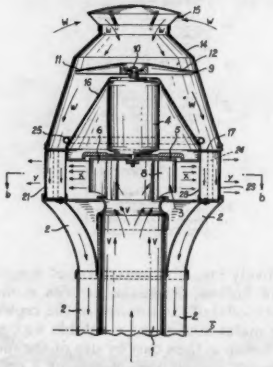


3,601,184

AIR EXCHANGING AND CONDITIONING DEVICE

Jean Hauville, 25, Place Jules Ferry, F92, Montrouge, France

Filed June 5, 1969, Ser. No. 830,727
Int. Cl. F24h *3/02*
U.S. Cl. 165—125 4 Claims



Air exchanger and conditioning device comprising a device for introducing fresh air and a device for extracting air contained in a given area, and a motor connected to both of said devices for driving the same at the same speed.

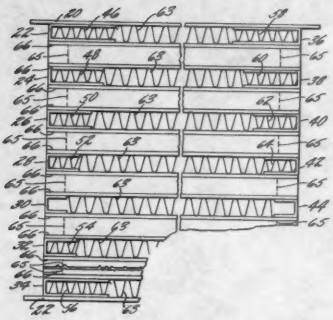
3,601,185

HEAT EXCHANGER CONSTRUCTION

Edward A. Rothman, South Glastonbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Nov. 4, 1969, Ser. No. 873,872
Int. Cl. F28f *3/00*
U.S. Cl. 165—166 4 Claims

A heat exchanger construction for maximum thermal fatigue life having C-shaped closure bars on the cool fluid side, the C-shaped closure bars being made from a material



having hot fluid fins cut back from the inlet face of the core to reduce the heat input to the closure bars.

3,601,186

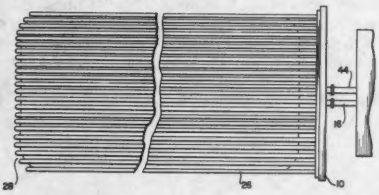
MODULAR HEADER SYSTEMS

Clay D. Smith, P. O. Box 35, Lafayette, N.Y., and Guy H. Mishoe, 103 Wooded Heights Drive, Camillus, N.Y.

Filed Apr. 17, 1970, Ser. No. 29,578

Int. Cl. F28d *7/06;* **A63c** *19/10*

U.S. Cl. 165—176 **9 Claims**



A header system of modular design capable of delivering a flow of fluid through each of a plurality of geometrically equidistant paths and of equivalent hydraulic lengths from a supply to a return point, said paths or circuits forming a multicircuit system for use in artificial ice-skating rinks and other heat exchange systems. Also the arrangement provides for self-venting of air or gases from the supply end generally upward until such gases are removed from the system.

3,601,187

DRILLING RISER

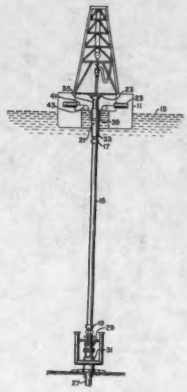
Danny R. Tidwell, Houston, Tex., assignor to Esso Production Research Company

Filed May 2, 1969, Ser. No. 821,173

Int. Cl. E21b *7/12*

U.S. Cl. 166—.5 **7 Claims**

A marine riser, for use with floating drilling equipment, that has flexible joints attached to its upper and lower ends. The lower flexible joint connects the riser to a subsea wellhead. The upper joint links the riser to a vertically extensible joint which is in turn pivotally connected to the drilling vessel. A tensioning device aboard the vessel maintains the riser in tension, preventing it from buckling.



3,601,188

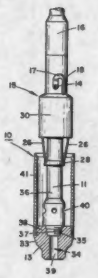
SHIELDING AN UNDERWATER WELLHEAD HUB

Robert G. McGlamery, New Orleans, La., and Thomas W. Childers, Los Angeles, Calif., assignors to Esso Production Research Company

Filed May 19, 1969, Ser. No. 825,613

Int. Cl. E21b *33/035*

U.S. Cl. 166—.5 **23 Claims**



Method and apparatus for protectively shielding the attachment hub of an underwater wellhead structure. Expansible means, mounted on a support member adapted to be inserted into the bore of an underwater wellhead structure, for shieldingly covering the attachment hub of such structure when the hub is exposed underwater, are installed in the bore before the hub is so exposed.

3,601,189

UNDERWATER MULTIPLE WELL INSTALLATION

Folker H. Weiss, Los Altos, and John W. Hopkins, Saratoga, both of, Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

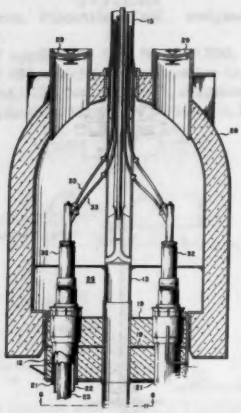
Filed Feb. 10, 1969, Ser. No. 797,850

Int. Cl. E21b *33/035, 15/02*

U.S. Cl. 166—.5 **4 Claims**

Clustered underwater wells are used as anchor piles for a production platform floating at the water surface. A drilling

template transmits tension loads from the well-anchor piles to a tension member which connects to the floating platform

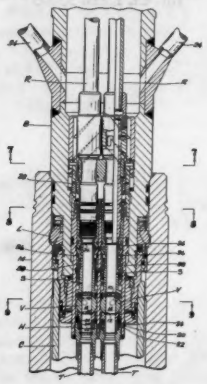


and also serves to index drilling, completion and reworking operations on the wells in the cluster.

3,601,190
WELL PRODUCTION APPARATUS WITH FLUID OPERATED VALVE

James D. Mott, Houston, Tex., assignor to Brown Oil Tools, Inc., Houston, Tex.

Filed May 15, 1969, Ser. No. 824,835
Int. Cl. E21b *33/04*
U.S. Cl. 166—85 **3 Claims**



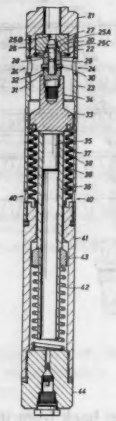
A well production apparatus including an improved valve adapted to be positioned in a well production string and operated responsive to a pressure fluid from the wellhead to open and close flow through the production string. The valve is positioned in the tubing hanger and is retained in open position during running by engagement with the running string.

3,601,191
GAS-LIFT SYSTEM AND METHOD

Everett D. McMurry, and Bolling A. Abercrombie, both of Houston, Tex., assignors to McMurray Oil Tool Specialties, Inc., Houston, Tex.

Filed Mar. 19, 1970, Ser. No. 20,923
Int. Cl. E21b *33/00*
U.S. Cl. 166—224 **14 Claims**

A gas-lift system is provided with a multiple valve arrangement, wherein a plurality of gas-lift valves which are each actuated by a pressure-responsive member, are installed in the tubing string at each lifting depth in the borehole wherein only a single valve is conventionally mounted. Thus, each of the valves will independently respond to the same injection pressure, and will thereby independently perform the same function in the system as the other valves at each lifting

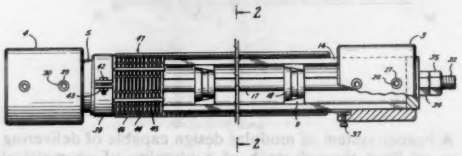


depth. Each such valve is preferably provided with suitable fail/safe means, such as a spring, whereby the valve will automatically close in the event of malfunction, and each valve is also preferably provided with a dual shutoff assembly to guarantee absolute fluidtight closure in the event of failure.

3,601,192
WELDED WELL STRAINER

Max E. Layne, and Theodore W. Munhausen, both of Houston, Tex., assignors to The Layne & Bowler Company, Houston, Tex.

Continuation-in-part of application Ser. No. 789,652, Dec. 26, 1968, now abandoned , which is a continuation-in-part of application Ser. No. 367,473, May 14, 1964, now abandoned. This application Aug. 18, 1969, Ser. No. 860,142
Int. Cl. E03b *3/18*
U.S. Cl. 166—232 **2 Claims**



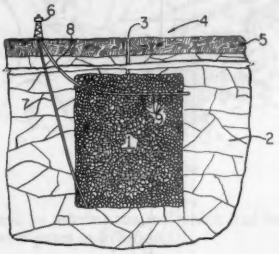
A wound wire well strainer having an elongate hollow cylindrical screen of helical wire windings axially spaced from one another by separating lugs formed therein and disposed in circumferentially spaced longitudinal rows, the windings being secured to one another by elongate weld beads disposed longitudinally between rows of lugs along the outer surfaces of the windings without protruding beyond the inner surfaces thereof such that the structural integrity of the screen is maintained in situ without a perforated central pipe or interior protrusions. One end of the screen is disposed within an annular recess in a tubular end fitting adaptable to couple the screen to a tubing string, and the screen is secured to the fitting by external and internal annular weld beads. Apparatus for and a method of making such a well strainer are also disclosed.

3,601,193

IN SITU RETORTING OF OIL SHALE

Guido O. Grady, Tulsa, Okla., assignor to Cities Service Oil Co., Tulsa, Okla.

Filed Apr. 2, 1968, Ser. No. 718,115
Int. Cl. E21b *43/24, 43/26*
U.S. Cl. 166—245 12 Claims



Initiation and support of the in situ retorting of oil shale is accomplished by injecting the retorting fluid at a multiplicity of points along a substantially horizontal plane in the chimney created by a nuclear explosion. The retorting fluid is injected through an injection well extending generally horizontally in the chimney, preferably in the uppermost portion thereof. A series of such injection wells may be employed in order to provide for the distribution of the retorting fluid substantially across the cross-sectional area of the chimney.

3,601,194

LOW FLUID LOSS WELL-TREATING COMPOSITION AND METHOD

Julius P. Gallus, Anaheim, Calif., assignor to Union Oil Company of California, Los Angelos, Calif.

Continuation-in-part of application Ser. No. 511,374, Dec. 3, 1965, now Patent No. 3,455,390, dated July 15, 1969. This application July 14, 1969, Ser. No. 841,522
Int. Cl. E21b *43/26, 43/27*
U.S. Cl. 166—283 23 Claims

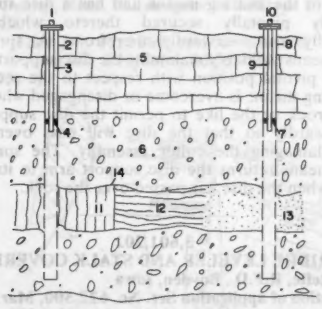
A low loss well-treating composition comprising an aqueous mixture of solid wax or wax-polymer particles and a surfactant specifically selected for its ameliorating effect upon the low fluid loss properties of the solid particles, and a process employing this composition in well drilling and treating.

3,601,195

SELECTIVE PLUGGING BY HOT FLUID INJECTION

Charles L. Hearn, Tulsa, Okla., assignor to Cities Service Oil Company

Filed Jan. 19, 1970, Ser. No. 3,882
Int. Cl. E21b *33/138*
U.S. Cl. 166—288 6 Claims



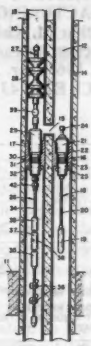
This is a method of controlling selective plugging of a reservoir when it is desired to place a plug some distance into the reservoir. By this method, plugging is accomplished by injecting into a permeable zone a hot fluid which, on cooling, sets up into a gel or solid, or increases greatly in viscosity, thereby effectively plugging the permeable zone. The reservoir is preheated by injecting a hot fluid which does not contain a plugging material. The radial distance of plugging can be controlled by the amount of preheating fluid and plugging agent injected. When the preheating fluid is hot water and the plugging agent is an aqueous solution these amounts can be estimated by simple equations.

3,601,196

REMOTE PERFORATING IN DUAL COMPLETION WELLS

Thomas W. Childers, Los Angeles, and Carl E. Reistle, III, Chatsworth, both of, Calif., assignors to Esso Production Research Company

Filed June 27, 1969, Ser. No. 837,248
Int. Cl. E21b *43/119*
U.S. Cl. 166—297 10 Claims



Method for perforating in a dual, parallel pipe string tubingless well. A crossover passage or port connects these pipe strings. Each pipe string is provided with a landing nipple at about the same depth below the crossover port. A radioactive source tool, which includes a radioactive pill for transmitting radiation in angular directions and a seating member for seating the radioactive source tool in the landing nipple arranged in one of the pipe strings, is pumped through the one pipe string until the seating member is landed in the landing nipple. The radioactive pill is suspended from the seating member a predetermined distance which is approximately the level at which it is desired to perforate. A perforating assembly, which includes a directional perforating gun, a directional radiation detector, a radioactivity-sensitive gun-firing mechanism including a source of electrical power for causing actuation of the perforating gun, a rotation device for causing the perforating gun to rotate, a seating member for seating the perforating assembly in the landing nipple arranged in the other pipe string, and a locomotive device for moving the perforating assembly through the other pipe string, is then pumped through the other pipe string until the seating member lands in the landing nipple. The detector of the perforating assembly is suspended a predetermined distance from the seating member so that it is positioned at the same level as the radioactive pill in the adjacent pipe string. The firing mechanism utilizes a switch which is actuated when the radioactive count detected by the radiation detector reaches a predetermined level. The directional gun is aimed so as to fire in a predetermined angular direction when the directional detector is facing the radioactive pill. The perforating assembly is rotated by circulating fluid in the pipe strings. After the perforating gun has fired, the perforating assembly is removed from the other pipe string. The radioactive source tool is then removed from the one pipe string. The perforating gun may be reloaded and the perforating procedure repeated at a different level in the well bore after repositioning the radioactive source tool and perforating assembly.

3,601,197

TREATMENT OF FORMATIONS WITH ARYL SULFONIC ACID

Robert C. Ayers, Jr., and Bert B. Williams, both of Houston, Tex., assignors to Esso Production Research Company

Continuation-in-part of application Ser. No. 812,349, Apr. 1, 1969, now abandoned. This application Apr. 29, 1970, Ser. No. 33,057

Int. Cl. E21b *43/27*

U.S. Cl. 166—307 18 Claims

A method for improving the permeability of a subterranean formation surrounding a wellbore wherein an aqueous solution containing an aryl sulfonic acid, such as *p*-toluem sulfonic acid, as the principal active constituent is injected into the formation to dissolve carbonates and similar materials. The solution may contain an organic polar compound or a minor amount of an inorganic acid.

3,601,198

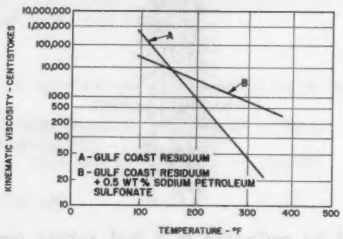
HYDRAULIC FRACTURING OPERATIONS

George P. Ahearn, and Othar M. Kiel, both of Houston, Tex., assignors to Esso Production Research Company

Filed Jan. 27, 1969, Ser. No. 794,061

Int. Cl. E21b *43/26*

U.S. Cl. 166—308 10 Claims



A hydraulic fracturing operation wherein a viscous residual petroleum fraction or similar hydrocarbon oil containing an oil-soluble anionic surface-active agent in a concentration sufficient to increase the viscosity index of the oil is used as a fracturing fluid.

3,601,199

PROCESS AND DEVICE FOR PRODUCING EXTINGUISHING FOAM

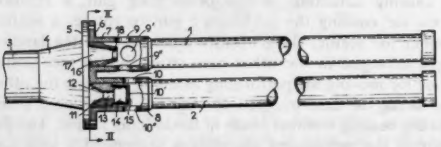
Georges Rotvand, 9 bis rue Le Conte de Lisle, Paris, France

Filed May 1, 1969, Ser. No. 820,800

Claims priority, application France, May 3, 1968, 150450

Int. Cl. A62c *31/12*

U.S. Cl. 169—15 8 Claims



The present invention is concerned with a method of producing a jet of extinguishing foam containing air, comprising producing a first jet of foam exhibiting more expansion above a more dense and more liquid second jet, the second jet forming a carrier vehicle for the first jet.

3,601,200

AUTOMATIC APPARATUS

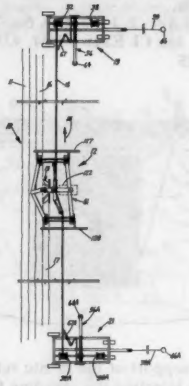
Maurice L. Peterson, Kerkhoven, Minn., assignor to Russell C. Bauman, Kerkhoven, Minn., a part interest

Filed Mar. 13, 1969, Ser. No. 806,812

Int. Cl. A01b *3/68*

U.S. Cl. 172—23 20 Claims

An automatic plowing apparatus having a self-propelled vehicle carrying facing plows guided by a cable extended across a field. Opposite ends of the cable are attached to movable anchoring units which index across the field as the plowing advances. The self-propelled vehicle follows the cable extended between the anchoring units, advances the anchoring unit, and then automatically reverses itself.



3,601,201

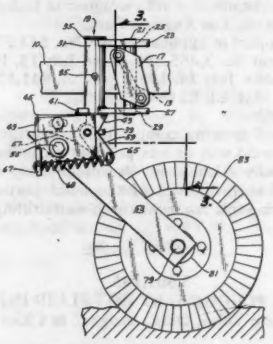
PLOW COLTER

Vincent O. Schmitz, Rte. 1, Clear Lake, Iowa

Filed Nov. 12, 1968, Ser. No. 774,979

Int. Cl. A01b *61/00*

U.S. Cl. 172—269 4 Claims



A plow colter assembly including a vertically disposed first shaft adapted to be operatively connected to the horizontally disposed plow beam and having a hollow bearing secured to and spaced from the first shaft. The second shaft is rotatably mounted in the bearing means and has a disc support arm operatively pivotally secured thereto which extends downwardly and rearwardly therefrom. A spring-loaded locking means yieldably maintains the disc support arm in an operative pivotal position with respect to the second shaft. The locking means is overcome or disengaged when the disc strikes a rock or the like to permit the disc support arm to pivot upwardly so that the disc will pass over the rock without damaging the colter assembly. The spring-loaded locking means returns the disc support arm to its operative position when the disc has passed over the rock.

3,601,202

RIDGE LEVELER AND STALK COVERER

Harlan Steffe, R.F.D., Boyden, Iowa

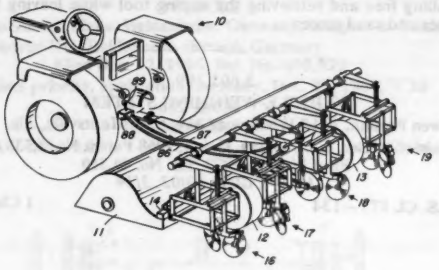
Continuation of application Ser. No. 622,500, Mar. 13, 1967, now abandoned. This application Jan. 21, 1970, Ser. No. 4,451

Int. Cl. A01b *63/00, 5/00*

U.S. Cl. 172—462 8 Claims

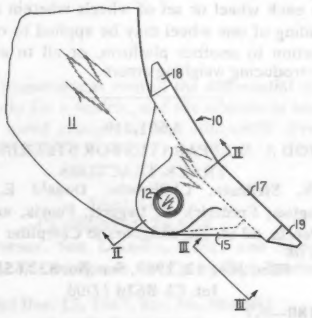
A machine which mounts a number of pairs of colters be-

hind a stalk cutter. The pairs of colters are positioned such that they cover material shredded by the stalk cutter and also



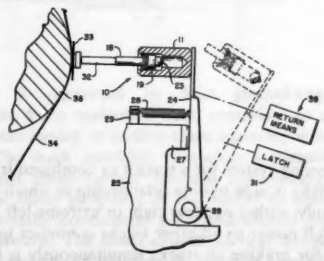
level the ground by moving the soil which had been placed in rows by the prior years cultivation.

3,601,203
REVERSIBLE RIPPER TIP
William L. Holmstrom, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Oct. 22, 1968, Ser. No. 769,538
Int. Cl. A01b *15/02*
U.S. Cl. 172—719 **3 Claims**



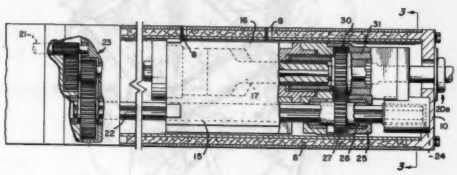
A ripper tip is removably attached to an end of a shank and has a point formed on each end thereof to facilitate reversal after one point has worn. Two pairs of apertures may be formed in a saddle mount portion of the ripper tip to align with respective bores formed in the shank to provide four adjusted positions therebetween.

3,601,204
DYNAMIC HAMMER AND METHODS OF STRIKING WORKPIECES
Ronald S. Denley, Niles, Ill., assignor to Teletype Corporation, Skokie, Ill.
Filed July 11, 1969, Ser. No. 840,948
Int. Cl. B41j *9/26;* **B25d** *15/02*
U.S. Cl. 173—1 **8 Claims**



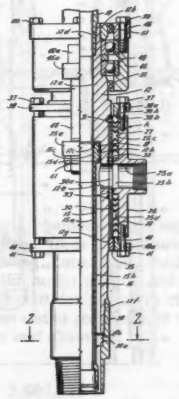
A printing hammer includes a striker and a weight, both slidably mounted within a housing. To hammer a workpiece, the housing is moved to advance the striker toward the workpiece, and the motion of the housing is suddenly arrested. When motion of the housing is arrested, the momentum of the weight drives the striker, forward into engagement with a workpiece.

3,601,205
ROCK DRILL
Ewald H. Kurt, Phillipsburg, N.J., assignor to Ingersoll-Rand Company, New York City, N.Y.
Filed Apr. 7, 1970, Ser. No. 26,364
Int. Cl. E21c *1/00*
U.S. Cl. 173—105 **7 Claims**



A rock drill assembly which includes a drilling machine mounted within a sound-absorbing container. The container is longer than the length of the drilling machine so that the container acts as the guide for the drilling machine as the machine is advanced into the material being drilled. The drill is provided with bearings which engage the inside of the container for guiding the movement of the drill within the container. Apparatus is provided for advancing and retracting the drilling machine relative to the container. There may be apparatus for independently rotating the drill steel relative to the container.

3,601,206
SIDE INLET SWIVEL
Charles A. Grantom, Houston, Tex., assignor to King Oil Tools
Filed Sept. 15, 1969, Ser. No. 857,953
Int. Cl. E21b *21/02;* **E21c** *7/10*
U.S. Cl. 175—215 **6 Claims**

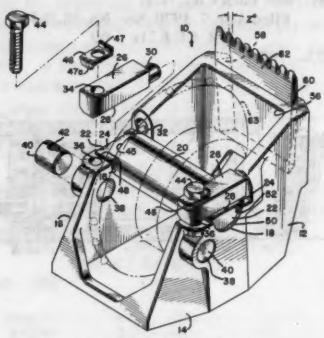


A new and improved swivel having an inlet on the side thereof for admitting fluid to the bore of the swivel to admit fluid in addition to fluid flowing longitudinally through the bore of the swivel, or to admit a second differential fluid from that flowing longitudinally through the swivel, or to admit fluid beyond a solid drive connection such as used in road boring.

3,601,207
CUTTER ASSEMBLY

William D. Coski, Mercer Island, and William H. Hamilton, Seattle, both of, Wash., assignors to Lawrence Manufacturing Company, Seattle, Wash.

Filed May 19, 1969, Ser. No. 825,654
Int. Cl. E21b *9/08*
U.S. Cl. 175—313 24 Claims

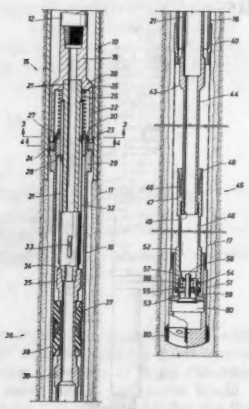


A cutter assembly comprising a cage support in which a cutter is rotatably mounted on a shaft, the shaft and support having surfaces which are mutually engageable, and/or arranged for receiving penetrating hardware, to restrain the shaft against rotation. The cage support carries on integral socket for replaceably securing a scraper.

3,601,208
SETTING TOOL

James K. Greer, and Marvin G. Kemp, both of Kilgore, Tex., assignors to Davis-Kemp Tool Co., Inc.

Filed May 27, 1969, Ser. No. 828,252
Int. Cl. E21b *43/10*
U.S. Cl. 175—314 8 Claims

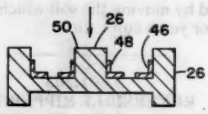


For use in placing a sand filter and liner in a well obstructed with sand, a setting tool adapted to support a liner and screen as the tool is run into the well bore, there being a fluid path through the tool and out a sand bit at the bottom for advancing through the sand on rotation in a particular direction, the sand being removed by rotation of the sand bit and the jetting action of the fluid flow to position the sand screen and liner at a desired elevation in the well bore, the apparatus further including a seal means adapted to be shaped by expansion to join the liner to the cased well bore on repeated reciprocation or pounding, the tubing string pulling free and retrieving the setting tool while leaving the liner and sand screen.

3,601,209
VEHICLE-WEIGHING SYSTEM

Owen Paelian, 1315 Woodmont Ave. S.E., Huntsville, Ala.

Division of Ser. No. 765,259, Oct. 4, 1968 Patent No. 3,533,481
Filed May 25, 1970, Ser. No. 40,310
Int. Cl. G01g *19/02, 3/14*
U.S. Cl. 177—134 1 Claim

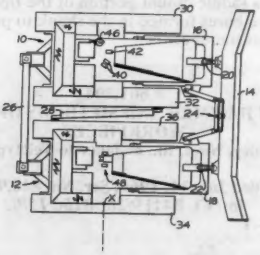


A weighing system for weighing trucks while in motion having a plurality of adjacent but independent weighing platforms for each wheel or set of wheels wherein a portion of wheel loading of one wheel may be applied to one platform and a portion to another platform, or all to one platform without introducing weighing errors.

3,601,210
METHOD AND APPARATUS FOR STEERING FOUR-TRACK TRACTORS

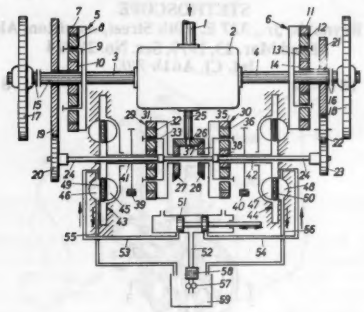
Robert N. Stedman, Chillicothe; Donald E. Sunderlin, Washington; Frederick R. Leggett, Peoria, and Willis R. Daft, Peoria, all of, Ill., assignors to Catepillar Tractor Co., Peoria, Ill.

Filed June 12, 1969, Ser. No. 832,655
Int. Cl. B62d *11/06*
U.S. Cl. 180—6.7 7 Claims



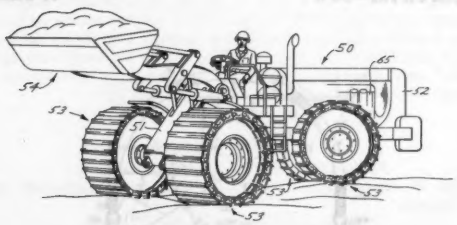
A steering system for a tractor or combined tractors having four tracks in side-by-side relationship in which power to one track only, wither extreme right or extreme left is interrupted while full power to all other tracks continues to drive. Brake means for braking all tracks simultaneously is included, and means effective when power to one track is interrupted, to direct the braking force exclusively to that track.

3,601,211
STEERING ARRANGEMENT FOR A TRACK-LAYING VEHICLE
Ernst-Gunter Finke, Heidenheim, Germany, assignor to Voith Getriebe KG, Heidenheim (Brenz), Germany
Filed Dec. 22, 1966, Ser. No. 605,529
Claims priority, application Germany, Dec. 22, 1965, V 30 002 II/63c
Int. Cl. B62d *11/00*
U.S. Cl. 180—6.66 3 Claims



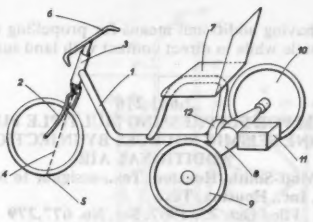
Differential transmissions control the differential drives of the endless tracks for a vehicle, and are selectively braked to cause relative speed changes of the differential drives and tracks so that the vehicle turns.

3,601,212
CUSHIONED TRACK
Robert A. Peterson, San Leandro, Calif., and Norman E. Risk, Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Dec. 15, 1969, Ser. No. 884,903
Int. Cl. B62d *55/08*
U.S. Cl. 180—9.44 60 Claims



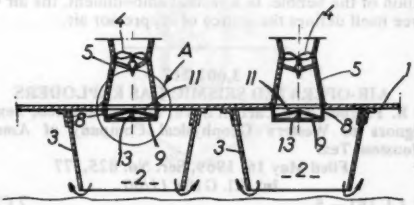
A machine is supported by four ground-engaging cushioned tracks. Each cushioned track comprises an annular resilient spacer having an endless track assembly mounted therearound. The track assembly comprises a plurality of shoes having flat inner surface portions surrounding and compressing the outer periphery of the spacer to normally define a substantially continuous, polygonal-shaped surface contact therebetween. The shoes extend laterally across the spacer and are connected together by laterally spaced link assemblies each positioned at a respective side of the spacer to form a unitized cushioned track.

3,601,213
STABILIZED THREE-WHEEL VEHICLE
Pierre Patin, 58, rue de Sevres, Boulogne-sur-Seine, France
Filed Feb. 20, 1969, Ser. No. 800,860
Claims priority, application France, Feb. 22, 1968, Feb. 7, 1969, 140,891;6902980
Int. Cl. B60k *23/04*
U.S. Cl. 180—27 1 Claim



This invention is concerned with a stabilized three-wheel vehicle having a steering wheel at the front and two driving wheels at the back, wherein the vehicle comprises a chassis carrying the front steering wheel mounted on a fork with positive play, a rear framework having two driving wheels, and a member which will pivot around the substantially horizontal axis and is disposed between the chassis and the rear framework, a device being provided to enable the pivotal member to be locked.

3,601,214
DEVICES FOR SUPPLYING FLUID UNDER PRESSURE TO GROUND EFFECT MACHINES
Jean Henri Bertin, Neuilly-sur-Seine, and Maurice Paul Berthelot, Issy-les-Moulineaux; both of, France, assignors to Bertin & Cie, Plaisir, France
Filed Mar. 24, 1969, Ser. No. 809,761
Claims priority, application France, Mar. 22, 1968, 145064
Int. Cl. B60v *1/00*
U.S. Cl. 180—118 6 Claims

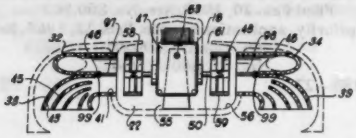


A device for supplying a chamber confining a cushion of fluid under pressure issuing from a pressure fluid source through a duct extending into said cushion-confining chamber, comprising at the outlet port of said duct into said chamber a nonreturn valve so devised as to close automatically and seal off said duct outlet responsively to any notable overpressure occurring in said chamber.

3,601,215
AIR-CUSHION VEHICLE
Roland N. Nissen, P.O. Box 183, Cawker City, Kans.
Filed Apr. 7, 1969, Ser. No. 813,980
Int. Cl. B60v *1/14*
U.S. Cl. 180—120 3 Claims

This invention is an air-cushion vehicle adapted to be used over the water as well as land having propulsion through a pair of blower members and operable through baffle structures to divide the output air flow between the functions of lift and propulsion. More particularly, this invention is an air-

cushion vehicle having gyroscopic control means utilizing the power means to provide torque characteristics for turning the

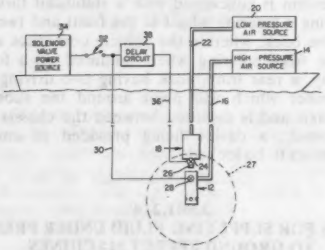


same and having additional means for propelling and directing the vehicle while in direct contact with land surfaces.

3,601,216
SYSTEM FOR SUPPRESSING MULTIPLE PULSE IN MARINE SEISMIC SOURCES BY INJECTION OF ADDITIONAL AIR

Lewis M. Mott-Smith, Houston, Tex., assignor to Mandrel Industries, Inc., Houston, Tex.

Filed Oct. 23, 1967, Ser. No. 677,279
Int. Cl. G01v *1/04, 1/38*
U.S. Cl. 181—0.5 H **5 Claims**

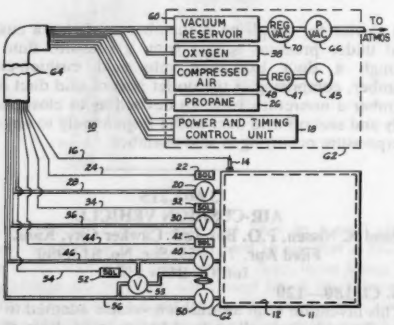


Apparatus and method for suppressing the initial and subsequent contractions of an air bubble used to generate a seismic signal, wherein the preferred embodiment a source of suppressor air is located immediately adjacent to the air valve source which creates the bubble, whereby the source of suppressor air is located within the expanded bubble when it approaches its largest diameter to allow the sudden and rapid release of suppressor air into the bubble to retard the contraction of the bubble. In a second embodiment, the air valve source itself defines the source of suppressor air.

3,601,217
AIR-OPERATED SEISMIC GAS EXPLODERS

Ben B. Thigpen, and Carl H. Savit, both of Houston, Tex., assignors to Western Geophysical Company of America, Houston, Tex.

Filed May 16, 1969, Ser. No. 825,377
Int. Cl. G10k *11/00*
U.S. Cl. 181—.5 **7 Claims**



This invention relates to marine seismic gas exploders and to methods for operating them. A seismic gas exploder typically includes a housing having an expansible combustion chamber to which is periodically supplied a charge of a combustible gas mixture. The charge is detonated and the spent gases are preferably exhausted by a vacuum-operated exhaust system. The combustible gas mixture in accordance with this invention generally includes oxygen, a fuel gas, and an inert gas or preferably a fuel gas, oxygen and air. The partial air pressure is selected to allow the oxygen to completely burn the fuel gas and the nitrogen portion of the air is selected to obtain a prefiring pressure equal to or less than the ambient pressure of the water.

3,601,218
STETHOSCOPE

Walker Reynolds, Jr., 327 E. 10th Street, Anniston, Ala.

Filed Mar. 23, 1970, Ser. No. 21,824
Int. Cl. A61b *7/02*
U.S. Cl. 181—24 **8 Claims**

Stethoscope having chest piece with air chamber therein. Sound delivery tube communicates with one side of chamber and sound-receiving passageway communicating with other side conveying sound through chamber from opposite side to said one side then to delivery tube. Chest piece rotatable to selected positions on tube permitting use of diaphragm and bell-type pieces.

3,601,219
AIR DISTRIBUTION PLENUM WITH SILENCER FOR HEAD ENCLOSURES

Herbert A. Raschke, Greenbrae, and Anthony L. Moretti, San Rafael; both of, Calif., assignors to E. D. Bullard Company, Sausalito, Calif.

Filed June 1, 1970, Ser. No. 42,367
Int. Cl. A42b *3/00;* **F01n** *1/08, 7/08*
U.S. Cl. 181—36 R **11 Claims**

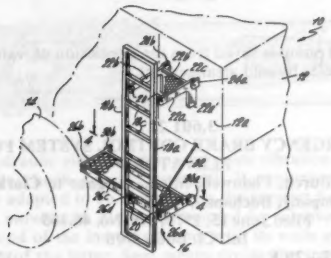
A plenum adapted to be mounted in a head protective hood for distributing respiration air to the interior of the hood. The plenum is formed by an air distribution tube that has a plurality of air jet openings in the wall thereof and spaced along the tube to achieve a desired distribution. Fabric in the form of a sleeve disposed within the tube and overlying the air jet openings in the tube so as to break up

the airflow through the jet openings to reduce noise level. A fabric sleeve disposed on the outer surface of the tube for breaking up airstreams exiting the jet openings in the tube. Structure for supporting the fabric sleeves in their respective positions.

3,601,220
RETRACTABLE LADDER

Richard Saucier, 79 Debbie Drive, Southington, Conn.

Filed Jan. 5, 1970, Ser. No. 565
Int. Cl. E06c *5/22*
U.S. Cl. 182—84 **3 Claims**

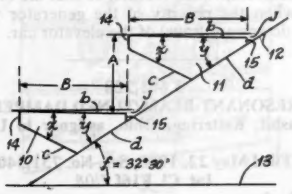


A retractable ladder for attachment to a vertical support. The ladder is attached by two legs each of which is hinged to both a wall and the ladder. The resulting arrangement is a parallelogram-type linkage. A spring is provided tending to pull the ladder in toward the wall. When the ladder is in the open position, the torque in the direction to open the ladder is at a maximum and the spring force is insufficient for retracting the ladder. When the ladder is in the closed or retracted position, the opening torque is at a minimum and the spring force is sufficient to keep the ladder closed.

3,601,221
STAIRS

Guillermo Fuentes, 7014 Stanford Ave., St. Louis, Mo.

Filed Dec. 10, 1969, Ser. No. 881,885
Int. Cl. E04f *11/00*
U.S. Cl. 182—93 **13 Claims**

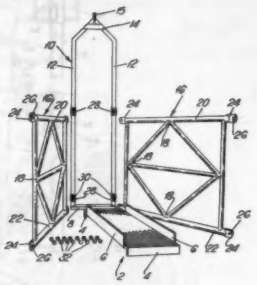


A staircase and method of constructing it wherein steps of generally triangular cross section have angles formed by the three sides determined in accordance with a prescribed formula, the steps mounted to a stringer with one side of the step substantially horizontal and a selected one of the two other sides mounted to the top of the stringer. The step mountings are located in accordance with the prescribed formula. The stringer is mounted between two floors inclined within a range of angles.

3,601,222
STAGING

William Charles Coombs, The Cottage Woodland Iver., Buckinghamshire, England

Filed Apr. 1, 1969, Ser. No. 811,876
Claims priority, application Great Britain, Apr. 11, 1968, Jan. 29, 1969, 17,737/68;5,059/69
Int. Cl. E04g *3/10*
U.S. Cl. 182—150 **4 Claims**

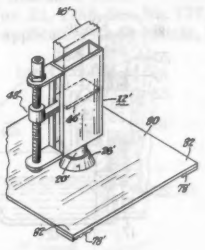


This invention relates to staging, preferably articulated staging, of the kind which is suspended from a support along the side of or around a work piece: the staging is generally formed of floor sections and upright side sections attached to the floor sections and also has hanger members, each hanger member having a top crosspiece to receive means from which the staging can hang.

3,601,223
LADDER SUPPORT

Thomas J. Lyons, 1252 Superior Ave., Pittsburgh, Pa.

Filed Jan. 6, 1970, Ser. No. 863
Int. Cl. E06c *7/44*
U.S. Cl. 182—204 **15 Claims**



A ladder support comprising a receptacle member shaped to receive an end portion of a stile of a ladder through an open end of said receptacle member, the other end of said receptacle member being shaped into a universal joint component, a base member for said support, said base member having a cooperating universal joint member extending from a central area thereof, and means for joining said receptacle member to said base member in cooperative engagement of universal joint components.

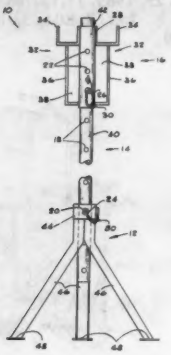
3,601,224
SCAFFOLDING

Robert Barras, "Tuck-a-Way", Hilton, Republic of South Africa

Filed Dec. 1, 1969, Ser. No. 881,124
Claims priority, application, Republic of South Africa, Dec. 11, 1968, 68/8161
Int. Cl. E04g *1/32;* **F16m** *11/00*
U.S. Cl. 182—225 **5 Claims**

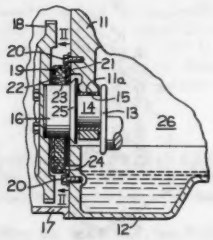
A scaffold element comprising a sleeve adapted to be mounted on a scaffold standard, the sleeve having at least

two locating brackets for locating scaffold members on the sleeve, the brackets being spaced about the periphery of the sleeve and/or at different elevations along the sleeve. A scaffold standard having a scaffold element of the kind described



slidably mounted thereon. A scaffold trestle comprising a base portion and a scaffold trestle comprising a base portion and a scaffold standard as described slidably mounted thereon.

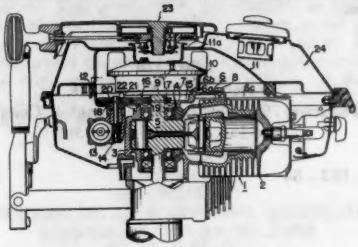
3,601,225
PLASTIC FOAM CRANKSHAFT SEAL
Thomas V. Wahl, North Pekin, and Ernest W. Landen, Peoria, both of, Ill., assignors to Caterpiller Tractor Co., Peoria, Ill.
Filed Mar. 3, 1970, Ser. No. 16,059
Int. Cl. F01m *1/10*; B01d *50/00*
U.S. Cl. 184—1 R **3 Claims**



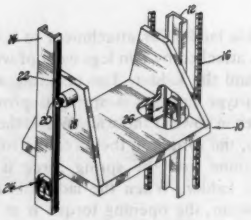
A crankshaft seal comprises a foam member, positioned adjacent the crankcase and extending around the opening from which a portion of the crankshaft extends to function as a demister for oil vapor escaping from the crankcase. A wick member extends around the crankshaft adjacent the foam layer and returns oil to the crankcase.

3,601,226
COMPACT LUBRICATING PUMP AND ENGINE ARRANGEMENT FOR AN OUTBOARD MOTOR
Yutaka Masaoka, and Masanori Takahashi, both of Hamakita-shi, Japan, assignors to Yamaha Watsudoki Kabushiki Kaisha, Hamakita-shi, Shizuoka-ken, Japan
Filed Aug. 27, 1969, Ser. No. 853,444
Claims priority, application Japan, Sept. 3, 1968, Sept. 30, 1968, 43/75869;43/84388
Int. Cl. F01m *1/02*
U.S. Cl. 184—6 Y **12 Claims**

An outboard motor wherein the fitting arrangement of a lubricating pump for lubricating an internal combustion engine is so designed to be simple and compact and a transmission gear mechanism for connecting the crankshaft of an engine to said pump is saved from the deposition of water drops or water scales by said arrangement.



3,601,227
EMERGENCY BRAKE CONTROL SYSTEM FOR ELEVATORS
Arthur R. Burch, Plainwell, Mich., assignor to Clark Equipment Company, Buchanan, Mich.
Filed June 15, 1970, Ser. No. 46,165
Int. Cl. B66b *5/06*
U.S. Cl. 187—29 R **12 Claims**



An emergency brake control system for elevator cars is disclosed. The system is adapted to be carried in its entirety on the elevator car and requires no external source of energization. An electrical generator is operatively connected between the elevator car and frame for developing a voltage corresponding to the speed of the car. Control means is connected to the generator and is responsive to a predetermined voltage for applying brakes to the car. A permanent magnet direct current generator is used with a control means including a unidirectionally conductive voltage responsive device such as a silicon controlled rectifier so that the brakes are applied only when the polarity of the generator voltage corresponds to downward travel of the elevator car.

3,601,228
RESONANT-BEAM/TUNED DAMPER
Ahid D. Nashif, Kettering, Ohio, assignor to University of Dayton
Filed May 22, 1968, Ser. No. 731,340
Int. Cl. F16f *7/08*
U.S. Cl. 188—1 **13 Claims**

This invention relates to a method and means of reducing vibration damage to components or component parts ex-

posed to and having a cylindrical response. Specifically, the invention determines the resonant period of vibration and utilizes a tuned-damping device for shifting the resonance peak of the supporting structure and reducing its amplitude. The tuned-damping device is of the beam type and can be extremely small relative to the component and may actually be integrated therein.

3,601,229

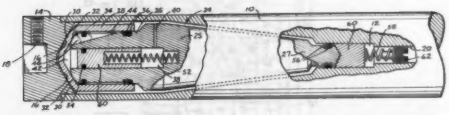
HYDRAULIC VIBRATION DAMPER

Norval E. Shurtliff, 908 1st Place, Springfield, Oreg.

Filed June 9, 1969, Ser. No. 831,415

Int. Cl. F16f *11/00, 7/10*

U.S. Cl. 188—1 B **12 Claims**



An hydraulic vibration damper arrests vibration of a boring bar, lathe chuck, or other support. It comprises an inertia member adapted to be mounted on the support for vibration-induced movement. A case is mounted for relative movement on one end of the inertia member with its walls spaced from the walls of the latter. Seal means divide the space between the walls into two chambers. Both chambers are filled with mercury or viscous oil. Upon vibration of the support, the liquid is driven from one side to the other, providing an hydraulic vibration damping effect which supplements the inertia damping effect of the inertia member. In addition, frictional engagement of the end of the inertia member with the case provides a frictional damping effect.

3,601,230

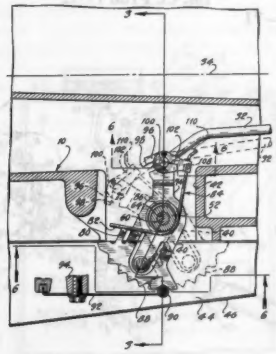
PARKING BRAKE FOR A VEHICLE DRIVELINE

Edward F. Platz, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed July 1, 1970, Ser. No. 51,483

Int. Cl. B60t *1/00*

U.S. Cl. 188—31 **4 Claims**



A parking brake for an automatic power transmission in an automotive vehicle driveline comprising a personally operable brake lever adapted for oscillation in the transmission housing about an axis that is disposed transversely with respect to the axis rotation of the torque output shaft, a brake pawl pivoted on the transmission housing, a cam rod adapted to be moved into engagement with the pawl to effect application of the brake, a linkage connection between the brake lever and the cam rod and an overload spring means for maintaining the brake lever and the cam rod in assembled relationship.

3,601,231

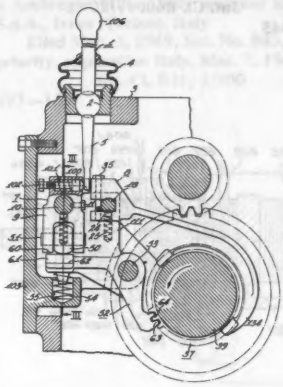
PARKING BRAKE MECHANISM

Ferdynand Kolacz, and Donald W. Longshore, both of New Berlin, Wis., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Mar. 28, 1969, Ser. No. 811,325

Int. Cl. B62c *7/02*

U.S. Cl. 188—69 **7 Claims**



A vehicle mechanism for operating a positive parking brake and shifting a transmission which includes an interlock to prevent shifting into a driving ratio when the brake is engaged. A safety switch 34 prevents starting of the engine when the brake is released and the transmission is engaged.

3,601,232

MOTOR VEHICLE BRAKING SYSTEM

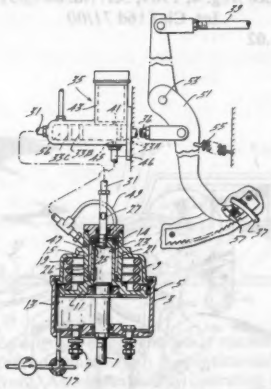
Albert H. Elias, Cranham, Essex, England, assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 21, 1968, Ser. No. 777,558

Claims priority, application Great Britain, Dec. 1, 1967, 54,830/67

Int. Cl. F16d *65/24*

U.S. Cl. 188—170 **9 Claims**

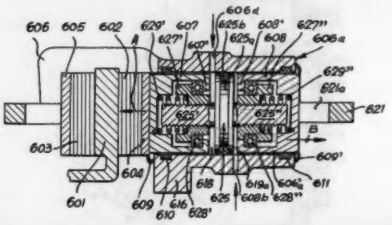


A vehicle brake system having a brake control device that is spring actuated to apply the vehicle brakes. A pneumatic pressure-responsive piston and a hydraulic pressure-responsive piston are both constructed to release said brake against the force of the spring.

3,601,233
PISTON ASSEMBLY FOR DUAL-NETWORK DISK-BRAKE SYSTEM

Helmut Marschall, Frankfurt am, Main; Wolfgang Kammermayer, Frankfurt, Fechenheim; Hans Albert Beller, bad Vilbel; Heinz Hahm, Walldorf, Hessen, and Juan Belart, Frankfurt am, Main, all of, Germany, assignors to Alfred Teves GmbH, Frankfurt am, Main, Germany

Division of Ser. No. 681,330, Nov. 8, 1967, Pat. No. 3,490,565
Filed June 9, 1969, Ser. No. 831,400
Int. Cl. B60t *11/20*
U.S. Cl. 188—345 5 Claims

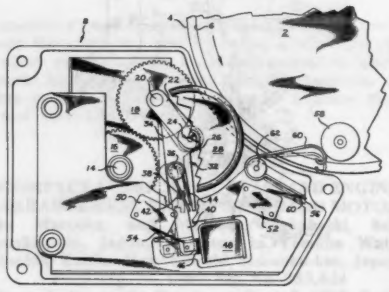


A vehicle-brake system having a tandem or twin master cylinder for delivering the brake fluid to independent transmission networks each connected with one compartment of a disk brake whose actuating cylinder is located on one side of the brake disk and receives at least one piston defining its working compartments or chambers therein. A pair of pistons are provided, so that the chambers are disposed to one side of the direct-acting piston while the other piston applies pressure to the brake housing or to a force transmission frame extending around the disk. A double-acting valve maintains the effective cross section of the actuating assembly in spite of loss of pressure in one of the transmission networks.

3,601,234
MICROTOME ELECTRIC DRIVE

Chester S. Ingraham, East Aurora, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

Filed Aug. 4, 1969, Ser. No. 847,051
Int. Cl. F16d *71/00*
U.S. Cl. 192—.02 4 Claims

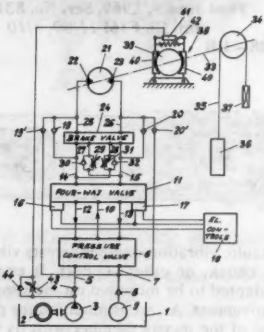


A microtome having an electric drive in conjunction with its hand wheel by which the microtome can be driven continuously or cyclically as well as by hand.

3,601,235
HYDRAULIC ELEVATOR DRIVE

Hans Hermann Huf, Schaffhausen, Switzerland, assignor to Aufzuge AG. Schaffhausen, Schaffhousen, Switzerland

Filed Dec. 2, 1969, Ser. No. 881,516
Claims priority, application Switzerland, Dec. 4, 1968, 18126/68
Int. Cl. F16d *43/28*, *43/286*
U.S. Cl. 192—3 R 10 Claims

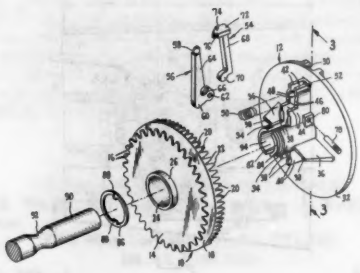


The hydraulic drive motor for the cable drum of an elevator is supplied with pressure fluid through a pressure control valve, a reversing valve, and a brake valve. The pressure control valve adjusts the liquid pressure in response to the torque transmitted between the motor and the cable drum, the reversing valve controls the direction of flow through the motor and also the flow rate, and the brake valve controls the return of liquid from the motor in response to the magnitude and the direction of the transmitted torque.

3,601,236
GEAR-LOCKING MECHANISM

Tom Stephenson, 64 Secret Lake Road, Avon, Conn.

Filed Apr. 6, 1970, Ser. No. 25,835
Int. Cl. F16d *11/12*
U.S. Cl. 192—71 10 Claims



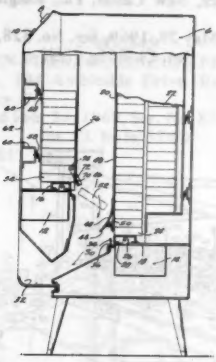
A gear-locking mechanism includes a rotatable gear and a locking assembly mounted adjacent to the gear and having a set of pawls thereon. The pawls are movable successively toward the teeth and have elements thereon that are engageable therebetween. Offset shoulders are provided on either the teeth of the gear or the engageable portion of one of the pawls, so that the set of pawls may cooperate to lock the gear in any of a large number of rotated positions relative to the locking assembly.

3,601,237

CIGARET DISPENSER WITH CONVERSION KIT

Walter C. Ovsienko, 4332 N. Morris Blvd., Milwaukee, Wis.

Filed Apr. 23, 1969, Ser. No. 818,622
Int. Cl. G07f *11/10*; B65g *59/06*; B65h *3/44*
U.S. Cl. 194—2 1 Claim



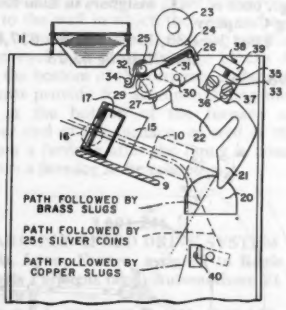
A conversion kit applicable on location to a conventional cigaret dispenser adapts it without externally visible change for vending packages of increased length. The required larger magazine extends into and somewhat restricts the internal dispensing passage. A change in form and function of the package actuated switch deflects the ejected pack downwardly to avoid clogging the restricted passage. Other deflector means cooperates to direct the pack through the discharge slot.

3,601,238

COIN SORTER ANVIL MOUNTING

Wilson M. Stewart, assignor to Vendall Machines Limited, both of Ottawa, Ontario, Canada

Filed Aug. 12, 1969, Ser. No. 849,313
Claims priority, application Canada, Apr. 14, 1969, 48,656
Int. Cl. G07f *3/02*
U.S. Cl. 194—101 6 Claims



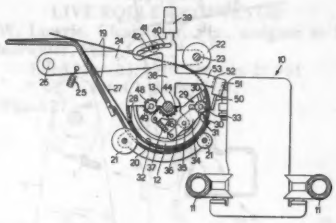
In a coin sorter in which coins and slugs roll down a runway past a magnet which affects their speeds an anvil is provided above the path of genuine coins leaving the runway, so that is is struck only by slugs which leave the runway at a greater speed than the genuine coins, such slugs bouncing off the anvil into a rejection path which is also followed by slugs which leave the runway at a slower speed than genuine coins, the genuine coins alone following an acceptance path. This is particularly useful in coin sorters which have a separate, parallel runway for all-nickel coins, the latter entering the separate runway via an aperture in a plate and eventually passing through another aperture in the plate to follow the acceptance path. The all-nickel coins are drawn through the first-mentioned aperture by a magnet against the resilient action of a spring-urged gate and stops are provided for limiting both inward and outward swinging movements of the gate.

3,601,239

LINE-FINDING FEED DEVICE FOR CONTINUOUS FORMS FOR TYPEWRITING AND SUCH MACHINES

Attilio De Ambrogio, Milan, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea (Torino), Italy

Filed Mar. 3, 1969, Ser. No. 803,659
Claims priority, application Italy, Mar. 7, 1968, 50823-A/68
Int. Cl. B41j *15/00*
U.S. Cl. 197—133 18 Claims



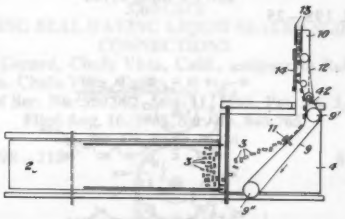
Feed apparatus in a printing machine for feeding forms having registration apertures to a printing position comprising a rotatable platen, a star wheel operating in conjunction with said platen to sense said apertures by entering said apertures and rotating with the movement of said apertures, and electrical means responsive to the sensing of said apertures to halt said platen at predetermined writing lines relative to said apertures.

3,601,240

DEVICE FOR ALIGNING AND DISPOSING ACCORDING TO THEIR LONGER DIMENSION ARTICLES INCOMING IN AN UNORDERED ROW

Antonio Dominici, 8, Via Ruggero d'Andreatte, Perugia, Italy

Filed Feb. 3, 1970, Ser. No. 8,338
Claims priority, application Italy, Feb. 3, 1969, July 18, 1969, 34670A/69;38776A/69
Int. Cl. B65g *47/00*
U.S. Cl. 198—20 14 Claims

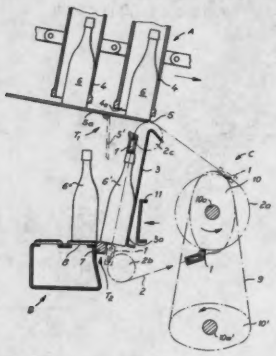


The device aligns a large number of randomly spaced articles being fed continuously or discontinuously along a wide or narrow front. An intermittently operating conveyor transfers a group of randomly spaced articles to a second continuous conveyor, on which the articles can be moved forward only on consent of a barrier which retains said articles upon the second conveyor and lets them free to proceed only one after the other, towards a movable guide which directs them in a row to a last conveyor which aligns and orients them definitely.

3,601,241
APPARATUS FOR TRANSPORTING BOTTLES OR THE LIKE

Joachim Kuhnt, Dortmund, and Joachim Ciongwa, Dortmund-Wambel, both of, Germany, assignors to Holstein & Kappert Maschinenfabrik Phonix, GmbH, Dortmund, Germany

Filed July 17, 1969, Ser. No. 842,466
Claims priority, application Germany, July 20, 1968, P 17 82 119.1
Int. Cl. B65g 47/00
U.S. Cl. 198—20 10 Claims

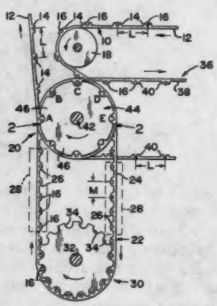


Apparatus which transports bottles between a platform and the cells of a continuously or intermittently moving endless cell conveyor comprises a pair of endless chains which carry spaced transversely extending supporting bars travelling upwardly from the platform toward successive cells of the endless conveyor or vice versa to engage bottles from below and to transport such bottles along an upwardly inclined guide plate. A set of oval gears drives the chains in such a way that the speed of the supporting bars increases during travel toward or away from the cells so that the speed of a supporting bar which actually supports a bottle is higher when such bar is adjacent to a cell and lower when such bar is adjacent to the platform.

3,601,242
WORK TRANSFER SYSTEM

George Horst Reinemuth, Clifton Heights, Pa., and Mark Joseph Connor, Wilmington, Del., assignors to Gulf & Western Industrial Products Company, Grand Rapids, Mich.

Filed July 3, 1969, Ser. No. 838,875
Int. Cl. B65g 47/00
U.S. Cl. 198—25 17 Claims

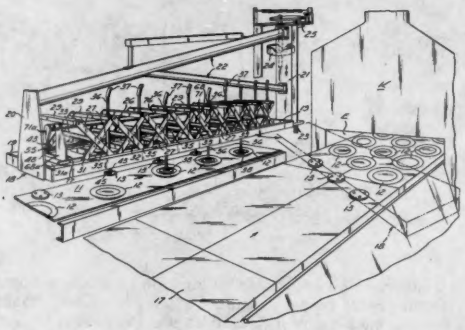


A system utilizing endless flexible members for transferring workpieces between processing stations. The members are provided with work holders uniformly spaced throughout their length. Transfer means are arranged and related to the spacings of the work holders so that transfer can take place between members having holders at different spacings.

3,601,243
TRANSFER MECHANISM

Stanley S. Gurgacz, New Castle, Pa., assignor to Interpace Corporation

Filed May 29, 1969, Ser. No. 828,929
Int. Cl. B65g 47/32
U.S. Cl. 198—30 3 Claims

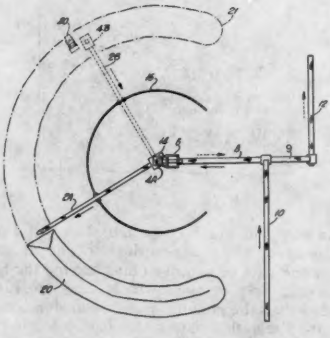


The present kiln loader transfer mechanism has first and second parallel rows of pickup spindles for respectively picking up ware pieces and ware support discs arranged in parallel rows extending lengthwise of an inlet conveyor. The transfer mechanism is turned horizontally to deposit the ware pieces and ware support discs in rows on a kiln conveyor at 60° to the latter. While being turned, the transfer mechanism reduces the spacing between the articles in each row and reduces the spacing between the two rows by a predetermined adjustable amount which insures that the discs will be aligned with the ware pieces lengthwise of the kiln conveyor.

3,601,244
COMBINATION STOCKPILER RECLAIMER

George F. Ort, Murray Hill, and William T. Holzhauer, Basking Ridge, both of, N.J., assignors to Esso Research and Engineering Company

Filed June 30, 1969, Ser. No. 837,815
Int. Cl. B65g 65/28
U.S. Cl. 198—36 7 Claims



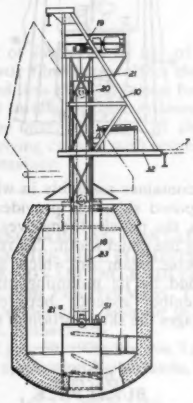
An inclined conveyor which is loaded with bulk material at its low end and discharged at its high end is disposed in a first

position with the low end under a bulk material feed source when said conveyor operates as a stockpiler and a second position with the low end in communication with a bulk material feeder, when said conveyor operates as a reclaimer. A first means is provided for movement of the inclined conveyor between said first and said second position. A second means is provided for pivotable movement of said inclined conveyor about one of its ends.

3,601,245
OXYGEN-FURNACE-LINING APPARATUS

Robert Munroe, 104 Ambleside Drive, Ross Township, Allegheny County, Pa.

Filed Feb. 24, 1969, Ser. No. 801,416
Int. Cl. B65g *37/00*
U.S. Cl. 198—101 **8 Claims**



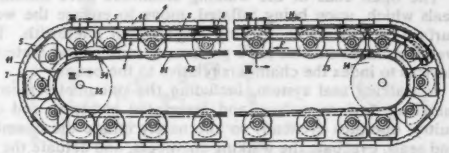
There is disclosed an apparatus for use in lining basic oxygen furnaces. Refractory blocks are carried by a conveyor to an automatic loader that transfers the blocks one by one to successive flights on a vertically traveling endless conveyor. This conveyor is carried in a cage that is vertically movable in a supporting frame, and the frame may be moved from one furnace to another. There is a foldable and collapsible unloading platform rotatably suspended from the bottom of the conveyor cage, and a receiving conveyor above the platform receives blocks from the flight conveyor and carries them radially to the wall in which they are to be placed, distributing them around the furnace as the platform rotates. The radial conveyor may also discharge blocks downwardly for first lining the bottom of the furnace; collapsing and folding arrangements provide for accommodating the apparatus to operation at the bottom of the furnace and to the restricted upper end of the furnace, as well as the eventual withdrawal from a furnace after the lining is completed and for entrance into a furnace to be relined.

3,601,246
VARIABLE-SPEED DRIVE SYSTEM

Jacques Dubois, Lyon, France, assignor to Regie Autonome Des Transports Parisiens (and) Automatisme Et Technique, Arcueil, France

Filed July 18, 1969, Ser. No. 843,152
Claims priority, application France, July 23, 1968, PV 160,264
Int. Cl. B65g *23/06, 23/08, 23/30*
U.S. Cl. 198—110 **13 Claims**

A variable-speed drive system comprising at least one device movable along a guide path, wherein a rotating drive member is provided which is rotated at a constant speed and rolls on a bearing surface associated with said guide path. Means are provided to vary the rolling radius of the rotating member on the bearing surface in dependence upon the position of the moving device along the guide path so that the linear speed of said device may vary according to a predetermined law. The rotating member may be a pulley having a slidable flange and associated with a constant width bearing

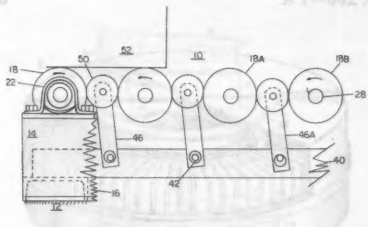


surface or a one-piece pulley associated with a variable section bearing surface.

3,601,247
LIVE ROLLER CONVEYOR

Richard W. Lowrie, Clearwater, Fla., assignor to Navigate, Inc., Clearwater, Fla.

Filed Mar. 23, 1970, Ser. No. 21,961
Int. Cl. B65g *13/02*
U.S. Cl. 198—127 **5 Claims**

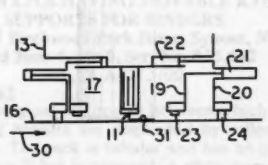


In a live roller conveyor wherein rollers each with an axle are held between a pair of rails, with drive means in engagement with the rollers, an arrangement to stop all or a group of previous rollers should one roller stop, to prevent excess pressure due to the bunching of material carried by the conveyor, comprising, live rollers generally spaced apart a distance less than the roller diameter; a guide rail under the live rollers; an arm connected to said guide rail having a free end; and at least one brake wheel disposed between succeeding live rollers and held by said arm, the center of the brake wheel being above the centerline of the live rollers, whereby, when one live roller is stopped, the brake wheel will wedge between the stopped roller and the roller immediately preceding it causing a chain reaction between all preceding brake wheels and the corresponding rollers.

3,601,248
WALKING SEAL HAVING LIQUID SEALED SLIDING CONNECTIONS

Milan E. Gerard, Chula Vista, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Division of Ser. No. 520,002, Jan. 11, 1966, Pat. No. 3,435,185
Filed Aug. 16, 1968, Ser. No. 848,765
Int. Cl. B65g *25/04*
U.S. Cl. 198—218 **8 Claims**



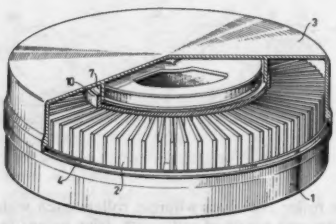
Open ended inner and outer walking chambers have a liquid sealed sliding connection between them, and the outer chamber has a similar liquid sealed sliding connection with

the high vacuum chamber of an electron beam gun whose beam passes through the liquid sealed chambers to impinge upon the surface of a workpiece.

The open ends of the walking chambers have inflatable seals which, upon being inflated, move to engage the work surface in releasable locking engagement therewith. The walking chambers also have pneumatic motors and metering devices to index the chambers relative to the beam.

A walking seal system, including the pneumatic motors, metering devices, valves, and associated elements and circuitry, operates cyclically to alternately inflate the chamber end seals, evacuate the walking chambers, and actuate the indexing motors to advance the chambers relative to the beam while maintaining therewithin the required low order vacuum environment for the beam as it moves relative to the workpiece.

3,601,249
CYLINDRICAL STORAGE BOX WITH A LID, FOR DIAPOSITIVES IN RADIALLY ARRANGED COMPARTMENTS
Sven Anders Larsson, 3 Frejavaegen 4, Sundbyberg, Sweden
Filed Nov. 6, 1969, Ser. No. 874,434
Claims priority, application Sweden, Dec. 16, 1968, 17221/1968
Int. Cl. A45c *11/00*
U.S. Cl. 206—1 R **6 Claims**

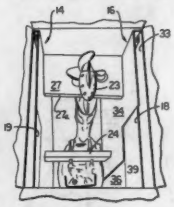


A cylindrical storage box for diapositives arranged in radially directed compartments of the box is provided with a lid or cover. The inner side of the lid facing the compartments is provided with a cylindrical wall coaxial with the lid. The cylindrical wall and the lid form a storage space for at least one magnetic tape reel and is provided with retaining means to detachably retain the reel in the storage space.

3,601,250
DISPENSING CAP FOR PILL BOTTLES
John B. Merila, 6706 Lane, Raytown, Mo.
Filed June 5, 1969, Ser. No. 830,684
Int. Cl. B65d *83/04*
U.S. Cl. 206—42 **8 Claims**

A dispensing cap for pill bottles having a hollow pill chamber with first and second passages communicating respectively with the interior of said bottle and with the exterior atmosphere, means normally maintaining said first passage open and said second passage closed, at which time any desired number of pills may be shaken from said bottle into said cap chamber, and operating means for simultaneously closing said first passage and opening said second passage, whereupon the pills in said chamber may be shaken into the palm of the hand.

3,601,251
CONTAINER FOR MARINE MOTOR
Jon M. Schwaner, Indianapolis, Ind., assignor to Inland Container Corporation, Indianapolis, Ind.
Filed Dec. 10, 1969, Ser. No. 883,817
Int. Cl. B65d *85/54*
U.S. Cl. 206—46 M **4 Claims**



Disclosed is a container assembly in which an outer container has its opposed sidewalls provided with rectangular reinforcing panels, the panels, themselves having reinforcing members spanning the panel width. The reinforcing members support a transverse beam on which a marine outboard motor is suspended by its mounting clamp. A transverse wedge-shaped member extends between the reinforcing members and engages the skeg portion of the marine motor.

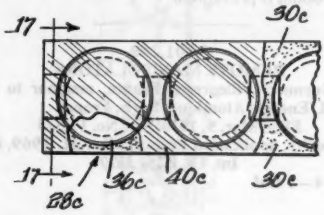
3,601,252
BURST PACK
Thomas B. Sager, Plymouth Valley, Pa., assignor to Kleer-Vu Industries, Inc., New York, N.Y.
Filed Aug. 1, 1969, Ser. No. 846,840
Int. Cl. B65d *77/12, 77/38*
U.S. Cl. 206—56 AA **5 Claims**

A container having a tubular portion of heat-sealable material which is sealed at one end in such a manner that such seal will rupture when a predetermined pressure is applied to the opposite ends thereof.

3,601,253
CONTAINER-PACKAGING DEVICE AND METHOD
Ougljesa Jules Poupitch, Chicago, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed June 6, 1969, Ser. No. 831,013
Int. Cl. B65d *71/00, 85/62*
U.S. Cl. 206—65 E **11 Claims**

This invention relates generally to means and methods for packaging containers, and more particularly to means and methods for packaging a plurality of containers having a circumferential shoulder or bead at the upper end thereof, as for example capped jars and conventional beaded cans. The embodiments of the invention disclosed in the present application include paperboard sheet material having container-accommodating apertures, the upper surfaces of such sheet

material being treated as by spraying to condition said surface for subsequent attachment thereof to a flexible, elastic, plastic film or membrane. By subjecting the adjacently positioned film and previously treated paperboard to heat, these parts become firmly adhered to each other. The marginal edges defining each of the apertures in the paperboard underlie the shoulder of a bead or jar cap of a complementary container. The elastic film encapsulates the upper extremity of the container and thus the film serves both as a protective coating for the end surface of the container as well as means for maintaining the marginal edge of the paperboard or fiberboard in underlying contact with respect to the shoulder of an associated container.

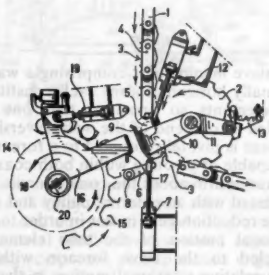


3,601,254

METHOD FOR DISCHARGING CONTAINERS, PACKED WITH COMMODITIES LIKE FOODSTUFFS, FROM A CONTINUOUSLY ADVANCING ENDLESS CONVEYOR AND A DEVICE FOR PERFORMING THIS METHOD

Jan Reede, Weesp, Netherlands, assignor to Stork Amsterdam N.V., Amsterdam, Netherlands

Filed Jan. 30, 1970, Ser. No. 7,053
Claims priority, application Netherlands, Feb. 10, 1969, 6902050
Int. Cl. B07c *5/36*
U.S. Cl. 209—71 **6 Claims**



Method for discharging containers out of a carrier from an endless conveyor of a continuous sterilizer or pasteurizer in which an intermediate sill or surface is used upon which the containers roll or glide towards a second conveyor; the sill can be tilted into a steeply inclined position between two subsequent discharging operations, in order to remove damaged or broken containers which did not pass to the second conveyor.

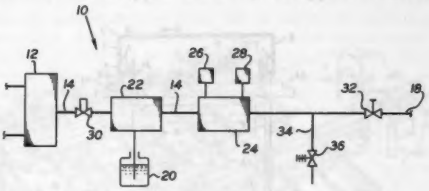
3,601,255

DIALYSATE DELIVERY SYSTEM

Edwin A. Pecker, Los Angeles; Thomas B. Quinn, Pacific Palisades, and Philip A. Wenger, Grenada Hill, all of, Calif., assignors to Vernitron Corporation, New York, N.Y.

Filed Apr. 21, 1969, Ser. No. 817,882
Int. Cl. B01d *13/00;* **C02b** *1/82*
U.S. Cl. 210—321 **1 Claim**

A system for delivering a dialysate to an artificial kidney device. The system includes a unique valving and control arrangement for bypassing a sensor device which senses and controls the flow of dialysate to the kidney device whenever it is desired to rapidly adjust the temperature and conductivity of the dialysate to a predetermined operating range.

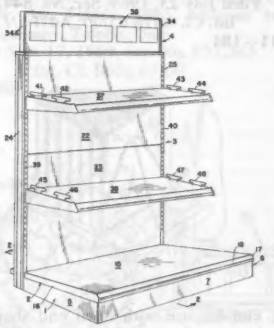


3,601,256

DISPLAY STAND

Melvin C. Bowers, Jr., and Joseph J. Clement, both of Atlanta, Ga., assignors to The Mead Corporation

Filed Feb. 11, 1970, Ser. No. 010,523
Int. Cl. A47b *9/14;* **A47f** *5/10*
U.S. Cl. 211—148 R **6 Claims**



A display stand primarily for use in merchandising includes a base, a back affixed to the rear of the base, an article-supporting element including a frame and a planar element affixed atop said frame and arranged for horizontal adjustment relative to the back so as to vary the supporting surface of said planar element. A front kick panel is interconnected with the base by a lost-motion connection and adjustable feet are disposed on the base whereby adjustment of the base can be effected without imparting vertical movement to the kick plate. A pair of spaced-apart vertically disposed elongated elements are telescopically related with corresponding spaced-apart tubular elements forming portions of the back and adjustably secured sign means mounted thereon and securing means holds the sign means in a predetermined position.

3,601,257

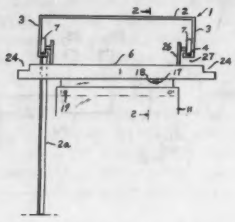
FILE APPARATUS HAVING MOVABLE RACKS AS SUPPORTS FOR BINDERS

Frank Potter, 97 Birchwood Park Drive, Syosset, N.Y.

Filed June 4, 1969, Ser. No. 830,442
Int. Cl. A47f *5/00*
U.S. Cl. 211—162 **6 Claims**

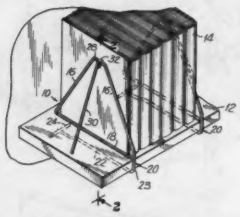
Apparatus having parallel tracks between which racks supporting looseleaf binders are suspended by rollers movable along the tracks. The rack is tubular and has an open ended channel in which a T-bar is disposed. A plate stem depending from the T-bar through a slot lengthwise of the bottom of the rack carries a binder. The T-bar is slidably inserted or removed through an end of the channel as a unit with the binder. A nameplate clipped to an end of the rack identifies the contents of the binder. A cutaway at each end of the rack

allows easy insertion or removal of the T-bar. The apparatus may be formed to carry tracks extending in a longitudinal as well as in a lateral direction, permitting selective use of either set of tracks to support the racks. The apparatus may also be



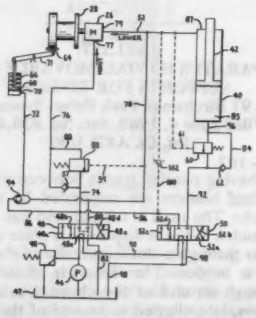
formed of groups of posts supporting tracks at various levels between them. The latter construction is extensible to include additional levels of tracks; and is of a knockdown nature permitting ready assembly or disassembly of its component parts.

3,601,258
BOOK END FOR SHELVES
Robert R. Stein, Mamaroneck, N.Y., assignor to Instrument Systems Corporation, West Nyark, N.Y.
Filed July 23, 1969, Ser. No. 844,093
Int. Cl. A47b *65/00*; **A47f** *5/13*
U.S. Cl. 211—184 **10 Claims**



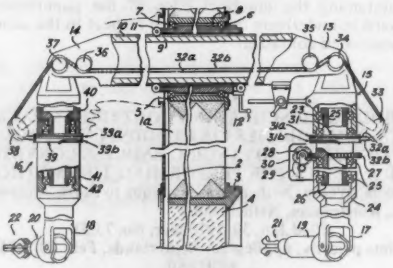
A book end for use with open end shelves and formed from a single strip of material in a generally triangular shape with a U-shaped base. The upper leg of the U is the base of the triangle. A support arm has one end pivotally attached to the apex of the triangle and the other end engaging the upper surface of the shelf remote from the base of the triangle. The support arm is pivotable to both sides of the plane containing the triangle.

3,601,259
CRANE CONSTRUCTION
John E. Olson, Portland, Oreg., assignor to Hyster Company, Portland, Oreg.
Filed Dec. 26, 1968, Ser. No. 786,983
Int. Cl. B66c *23/06*
U.S. Cl. 212—55 **3 Claims**



A crane having an extensible boom with a hydraulic cylinder for extending and retracting the boom and a hydraulic winch motor on a nonextensible portion of the boom controlling the paying-out and taking-in of cable which suspends a load block and hook from the outer end of the extensible boom portion. The boom extension cylinder and winch motor are series connected in the same hydraulic circuit in a manner so that line is automatically paid out simultaneously and coextensively with the extension of the boom and at least at the same rate, whereby drawing up of the load block against the boom is prevented.

3,601,260
REMOTE MANIPULATORS
Rene Le Guennec, Villepreux, France, assignor to Commissariat A L'Energie Atomique, Paris, France
Filed Mar. 9, 1970, Ser. No. 17,508
Claims priority, application France, Mar. 31, 1969, 6909743
Int. Cl. B25j *3/00*
U.S. Cl. 214—1 CM **2 Claims**

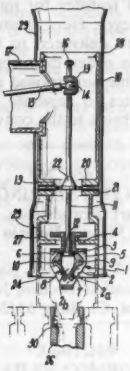


In a master-slave manipulator comprising a wall-traversing tube, two normally horizontal arms each constituted by two coaxial tube elements so arranged that one element is pivotally coupled to one end of the wall-traversing tube and the other element is pivotally coupled to a forearm, an internal sleeve is capable of pivoting within both coaxial tube elements of the master arm about the common axis thereof. The sleeve is associated with an external pulley and cable system and driven by a reduction-gear motor in order to produce the relative rotational motion of the tube element which is pivotally coupled to the slave forearm without thereby producing any relative rotational motion in the master arm between the two corresponding tube elements.

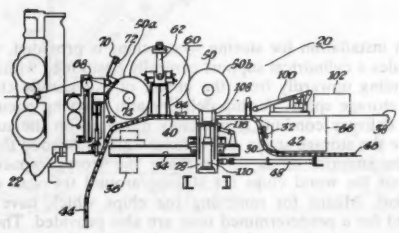
3,601,261
HANDLING GRAB, ESPECIALLY FOR NUCLEAR REACTOR FUEL ELEMENTS
Gilbert Michot, Pertuis, France, assignor to Commissariat A L'Energie Atomique, Paris, France
Filed Jan. 23, 1969, Ser. No. 793,281
Claims priority, application France, Feb. 15, 1968, PV140027
Int. Cl. B25j *15/00*
U.S. Cl. 214—1 **3 Claims**

A handling grab comprising a body of revolution of generally conical shape, grappling claws pivotally mounted in said body, an axial operating rod having a terminal cam which can be displaced axially within said body so as to cause the pivotal movement of said claws between a position of withdrawal within said body and an outwardly projecting position, a cylindrical sleeve surrounding said operating rod and said body and having a terminal annular shoulder which is intended to be applied against fuel elements adjacent to the element to be engaged. The operating rod is connected to

a positioning arm by means of a ball joint assembly so that the grab can be readily oriented about its axis and automatically realigned with any fuel element to be engaged in the event of misalignment of said grab.



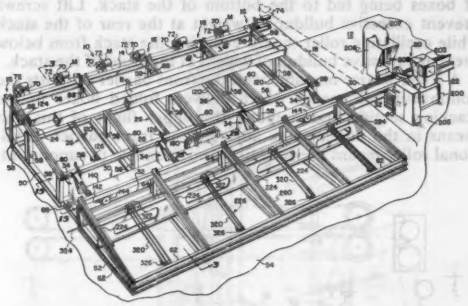
3,601,262
CORE REMOVAL APPARATUS
Andrew J. Petros, and Clement S. Rybar, both of Pittsburgh, Pa., assignors to Mesta Machine Company, Pittsburgh, Pa.
Filed Apr. 23, 1969, Ser. No. 818,498
Int. Cl. B66c *1/06*
U.S. Cl. 214—1 BB **18 Claims**



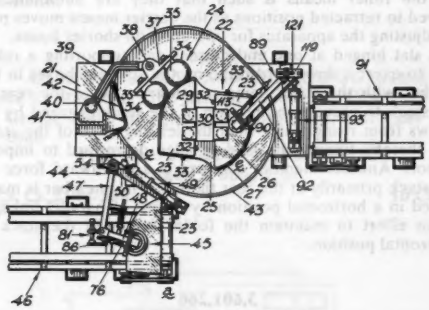
We disclose in a rolling mill having at least one rolling mill stand and a coil entry section for said stand disposed adjacent thereto, said entry section including a coil feed reel, a scrap core removal mechanism mounted adjacent said feed reel and having scrap core pickup means engageable with a scrap core on said reel and movable to a scrap core release position, a movable scrap core receptacle, and means for moving said receptacle between said release position and a repository for said scrap core.

3,601,263
BILLET-HANDLING APPARATUS
Robert R. Stratton, Park Ridge, and Robert J. Kaszuba, Chicago, both of, Ill., assignors to Pettibone Corporation, Chicago, Ill.
Filed Oct. 24, 1969, Ser. No. 868,998
Int. Cl. B65g *47/24*
U.S. Cl. 214—1 QG **20 Claims**

Billet handling and treating apparatus wherein successive billets emanating from a billet-spotting station are supplied to and stacked upon a charge table from which they are withdrawn, one at a time and deposited upon a manipulating car which conducts them to a grinding station for treatment. While the billets are being withdrawn from the stack, the charge table continues to be supplied with fresh billets which are formed into a reserve stack. When the original stack is exhausted, the reserve stack moves into position for withdrawal of the billets and the formation of another stack is initiated. Such billet stacking and withdrawal of billets is continuous so that at no time is there a lack of billets for the grinding operation.



3,601,264
LOADING AND UNLOADING APPARATUS
George F. Ritter, Jr., Toledo, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio
Filed Nov. 17, 1969, Ser. No. 877,263
Int. Cl. B65g *61/00*
U.S. Cl. 214—1 BH **9 Claims**



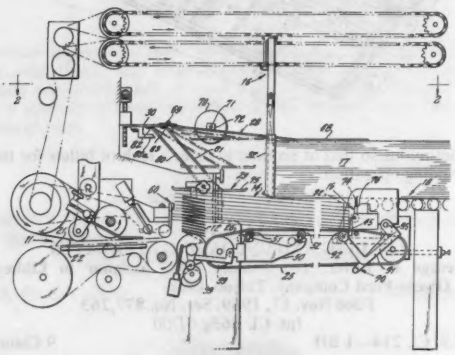
Apparatus for automatically loading flat workpieces from a horizontal conveyor onto a constantly rotating worktable on which the workpieces are clamped. The invention includes a vacuum pickup device carried by articulate transfer means capable of deflecting in two directions to permit the pickup device to move in an arc about the axis of the worktable when the workpiece is simultaneously clamped on the worktable and gripped by the pickup device. The transfer means comprises a primary arm and a secondary arm resiliently held in a predetermined angular relationship, and a spring-loaded hinge mounting the pickup device to the secondary arm.

3,601,265
BLANK STACKING, STRAIGHTENING AND DELIVERY MEANS
Albert F. Shields, Forest Hills, N.Y., assignor to S & S Corrugated Paper Machinery Co., Inc., Brooklyn, N.Y.
Filed Nov. 27, 1968, Ser. No. 779,459
Int. Cl. B65g *57/30*
U.S. Cl. 214—6 BA **7 Claims**

Apparatus for stacking and straightening folded tubular boxes is constructed with a front barrier, which arrests forward box movement, having offset upper and lower vertical portions with the lower portion having a downward and rearwardly inclined section at the bottom thereof. A longitu-

dinally oscillating slapper bar for engaging the rear of the stack is positioned opposite the vertical sections of the barrier and is disposed above the incline in the barrier. The inclined portion of the front barrier serves to prevent excessive buildup of weight in the stack from impeding the entry of boxes being fed to the bottom of the stack. Lift screws prevent excessive buildup of weight at the rear of the stack while oscillating roller means engaging the stack from below prevent excessive buildup of weight at the front of the stack.

A roller device movable with the front barrier supports the continuous belt means which delivers folded boxes to the stacking section and supports the upper flight of this belt means in the critical area adjacent the front barrier. Additional roller means are selectively positionable to support ad-



ditional portions of the delivery belt as required. Mounting for the roller means is such that they are automatically moved to retracted positions as the barrier means moves past in adjusting the apparatus for operation on shorter boxes.

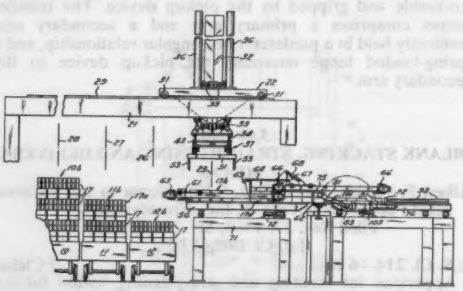
A slat hinged at one end thereof and supporting a roller acts to exert a downward force on the stack of boxes in the stacker with the roller being positioned toward the rear of the stack to prevent the portion of the stack engaged by lift screws from rising faster than the leading edge of the stack and thereby tipping the leading edge downward to impede takeoff. Another member also exerts a downward force on the stack primarily at the rear thereof. This member is maintained in a horizontal position by means of parallel linkages in an effort to maintain the folded boxes in the stack in horizontal position.

3,601,266

UNLOADER BLENDER

Florentin J. Pearne, Whittier; Frank S. Pearne, San Gabriel, and Frederick G. Robson, Long Beach, all of, Calif., assignors to Aircraft Mechanics, Inc., Los Angeles, Calif.

Filed Apr. 22, 1969, Ser. No. 818,240
Int. Cl. B65g *59/02*
U.S. Cl. 214—8.5 C **11 Claims**



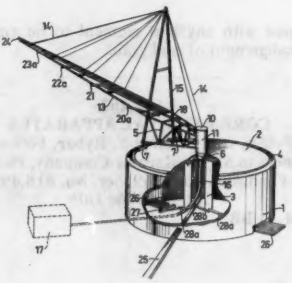
An unloader blender is disclosed for handling bricks or the like. The unloader is operable to grip grids of brick from selected stacks of grids and transfer such grids to a platform. By programming the machine to sequentially grip and transfer grids from selected stacks it is possible to blend the bricks so that different types of brick are delivered to the platform in predetermined ratios of numbers. The machine also includes a second transfer for moving the bricks from the platform to a conveyor. Here again, blending is provided so that groups of brick delivered to the conveyor are not necessarily in the same order they appear on the platform. The grids include double superposed rows of brick and the second transfer operates to separate the upper and lower layers and delivers the brick to the conveyor as a single layer.

3,601,267

INSTALLATION FOR STORING WOOD CHIPS

Rune Axling, and Karl Brandstrom, both of Alfredshem, Sweden, assignors to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Filed June 4, 1969, Ser. No. 830,284
Claims priority, application Sweden, June 7, 1968, 7742/68
Int. Cl. B65g *65/28*
U.S. Cl. 214—10 **9 Claims**



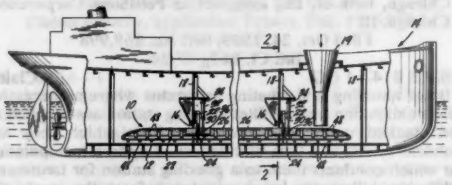
An installation for storing wood chips is provided, which includes a cylindrical support centrally positioned within and extending upwardly from the center of a generally circular chip storage space. A chip delivery arm carrying pneumatic chip delivery conduits is rotatably mounted on the support above the storage space and extends radially beyond the wall of the support so as to overhang the storage space and deposit the wood chips for storage around the wall of the support. Means for removing the chips which have been stored for a predetermined time are also provided. The support prevents the stacked chips from interfering with the operation of the chip delivery and removal mechanisms and serves as a central core for the installation through which are conveyed the chips to be stored and chips being removed from the storage space.

3,601,268

BULKHEAD CONVEYER BELT DOOR

Victor W. Bethge, Glen Head, and Wilbur C. Weiland, Churchville, both of, N.Y., assignors to Walz and Krenzer, Inc., Rochester, N.Y.

Filed Nov. 17, 1969, Ser. No. 877,220
Int. Cl. B63b *27/22*
U.S. Cl. 214—15 D **8 Claims**



A gate for installation on the bulkhead of a ship, for closing against a continuous conveyor belt which passes through

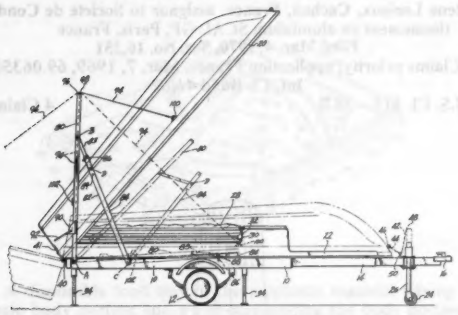
an opening in the bulkhead. The gate is formed by upper and lower sections, mounted respectively above the upper belt of the continuous conveyor belt, and between the upper and lower belts of said conveyor. The gate sections move independently of each other, the upper portion slidably mounted to the bulkhead to move vertically upward and away from the conveyor belt, or downward into a sealed position against the upper surface of the upper belt. The lower section of the gate is pivotally mounted in the bulkhead opening to swivel between a vertically disposed closed position, wherein its upper surface engages the lower face of the upper belt and its lower face forces the lower belt against the floor of the bulkhead opening, and an open position in which the lower section of the gate is pivoted on its mounting to lie in a horizontal plane intermediate the vertical distance between the upper and lower belts. Sealing plugs are slidably mounted at the sides of the bulkhead opening adjacent the lower belt to function as plungers for extending into said opening to seal against the lower belt, thereby compensating for lateral displacement of the belt which makes other types of seals ineffective.

3,601,269

BOAT AND TRAILER COMBINATION HAVING HOISTING MEANS FOR INVERTING THE BOAT AS IT IS LOADED AND UNLOADED

Edward F. Heinig, North Haven, Conn., assignor to O. F. Mossberg & Sons, Incorporated, North Haven, Conn.

Filed Mar. 9, 1970, Ser. No. 17,396
Int. Cl. B60p *1/44*
U.S. Cl. 214—75 **11 Claims**



A boat and trailer combination in which a hoisting attachment is provided for pivoting the boat either end-over-end or sideways about detachable hinges, by which the boat is connected to the trailer, from an inverted position on the trailer to an upright position beside the trailer. The hoisting attachment includes a mast which provides an elevated position from which to lift the boat about the hinges and a winch which is desirably designed so that the cable can be paid out only by reversing the operating input to the winch, as by reversing the direction in which the handcrank is rotated. By locating the mast near the axis of the hinges, rotation of the crank on the winch in one direction raises the boat up to the mast, and then after the boat swings past the mast, the crank on the winch is reversed so that the boat is gently lowered from the mast to a position adjacent the trailer or onto the trailer, depending on whether the boat is being unloaded or loaded.

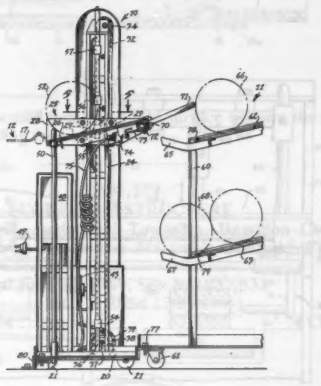
3,601,270

ELEVATOR WITH ROLL HANDLING APPARATUS

Thomas W. Martin, Sr., Nashville, Tenn., assignor to Cutters Machine Company, Inc., Nashville, Tenn.

Filed June 10, 1969, Ser. No. 831,848
Int. Cl. B65g *1/06*
U.S. Cl. 214—95 R **2 Claims**

An automatic cloth roll loading apparatus including an inclined roll supporting platform, a stationary barrier cooperating with the lower end portion of the platform, and means for raising the platform to a dumping or discharging position above the barrier and for lowering the platform to a roll storage position in cooperation with the barrier.



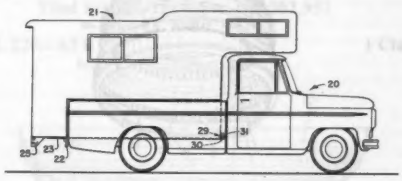
A further feature of the apparatus is a cloth roll storage truck having at least one roll supporting cradle adjacent the upper end of the platform, and pivotal fingers projecting from the rear of the platform adapted to interdigitate with the cradle in order to lift and remove one roll at a time from the truck to the platform on each upward movement of the platform.

3,601,271

CAMPER LOADING AND RETAINING SYSTEM

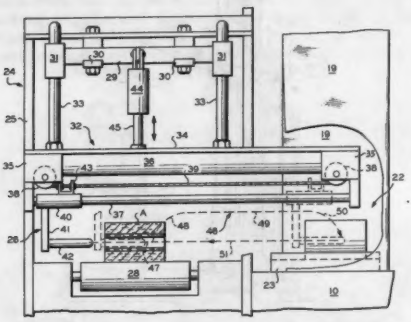
John L. Margetts, 2182 Berkeley, Salt Lake City, Utah, and George Philip Margetts, 3196 Millcreek, Salt Lake City, Utah

Filed Mar. 21, 1969, Ser. No. 809,252
Int. Cl. B60p *1/64*
U.S. Cl. 214—516 **10 Claims**



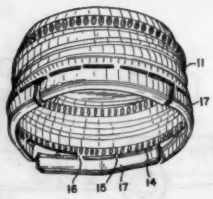
A camper-loading system wherein a single drive gear mounted on a truck bed is adapted to drive a pair of driven gears and their associated load gears or one of the driven gears and its load gear individually, to thereby drive the load gear or load gears in meshing engagement with racks on the bottom of a camper body; extensible front legs, pivoted on a support shaft fixed to a weight-distributing mounting plate on the sidewall of a camper body, are movable between a camper-supporting position and a stowed position; wheel-carrying rear legs are attachable to either the camper body or to an adjustable bumper secured to the camper body and are movable between an extended support position beneath the camper body and an easily accessible stowed position; and an easily released lock is provided to automatically secure the camper body against sliding off of the truck bed after it has been loaded thereon.

3,601,272
FEEDING APPARATUS
Willard B. Black, Cincinnati, Ohio, assignor to Phillips Petroleum Company
Filed Feb. 26, 1969, Ser. No. 802,394
Int. Cl. B66f 9/14
U.S. Cl. 214—730 2 Claims



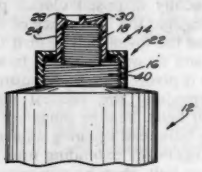
An article feeding apparatus for automatically depositing articles within the packaging zone of a plastic film packaging machine.

3,601,273
PILFERPROOF CLOSURE WITH VERTICAL WEAKENING LINES
Howard R. Kutcher, Allison Park, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed Jan. 31, 1969, Ser. No. 795,636
Int. Cl. B65d 41/20; A61i 1/00; B65d 55/02
U.S. Cl. 215—7 12 Claims



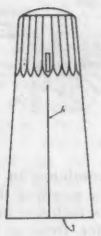
The subject matter relates to a pilferproof closure for a container in which the closure is threadedly engaged with the thread of the neck of the container and is of the type which includes a locking band at its lower end having its lower edge turned under a shoulder on the container neck, with the locking band being separated from the main body of the closure by a circumferential line of lancing and spaced bridges, with the bridges being the sole means of attachment of the band to the main body of the closure. The locking band is provided with several circumferentially spaced vertical weakening lines, preferably four equally spaced, which rupture on unscrewing of the closure to produce outwardly flared sectors in said locking band, whereby the entire closure, including the locking band, is completely removable from the container neck. The bridges do not fracture for the most part, but instead function to provide bend lines for the outwardly flared sectors.

3,601,274
BOTTLE AND SAFETY CAP FOR USE THEREWITH
Earl H. Johnson, 4 Kanatha St., Blackstone, Mass.
Filed Aug. 27, 1969, Ser. No. 853,293
Int. Cl. B65d 55/02
U.S. Cl. 215—9 7 Claims



A bottle on which a double-cap assembly is applied, an outer cap member of the safety cap assembly threadably engaging a lower neck portion of the bottle and encircling an inner cap member, the inner cap member threadably engaging an upper neck portion of the bottle and the neck portions being oppositely threaded so that removing the cap members from the bottle requires some manipulation, thereby preventing easy removal of the cap assembly from the bottle by a child.

3,601,275
CAPSULE FOR BOTTLES
Rene Lorieux, Cachan, France, assignor to Societe de Conditionnement en aluminium SCAL GP, Paris, France
Filed Mar. 4, 1970, Ser. No. 16,351
Claims priority, application France, Mar. 7, 1969, 69.06350
Int. Cl. B65d 41/02
U.S. Cl. 215—38 B 4 Claims

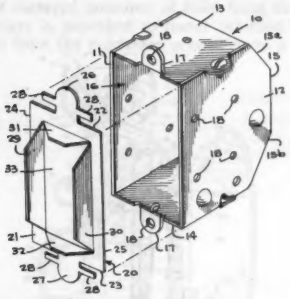


A capsule top or crown for bottles of sparkling wine or champagne in which the capsule or crown has a skirt portion of frustoconical shape with one or more crests formed along a generatrix in the skirt portion to enable proper orientation of the capsule with respect to printed matter thereon so that folds formed in the skirt during attachment will be properly oriented with respect to the printed matter.

3,601,276
PROTECTIVE COVER FOR ELECTRICAL RECEPTACLE BOXES
Edward R. Culpepper, 1028 Pennsylvania Ave., Suffolk, Va.
Filed Nov. 26, 1969, Ser. No. 880,055
Int. Cl. H02g 3/14
U.S. Cl. 220—3.8 8 Claims

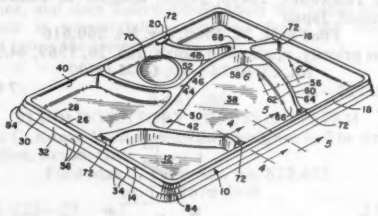
A removable protective cover for an electrical receptacle box or switch box in a building wall to protect the box against entry of plaster during plastering of the building wall, wherein the cover is formed as an integral body of deformable sheet material having a rectangular panel portion for covering the front opening of the box with its lateral edges

fitting within the opening, and including extensions which cover the conventional mounting ears of the receptacle box



and have bendable fastening means for fastening the cover to such mounting ears.

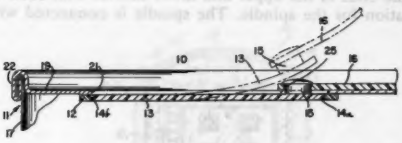
3,601,277
DISPOSABLE FOOD TRAY
James M. Andrews, and George H. Sollenberger, both of Pittsburgh, Pa., assignors to Sinclair-Koppers Company
Filed Aug. 20, 1969, Ser. No. 851,681
Int. Cl. B65d *1/24*
U.S. Cl. 220—20 2 Claims



A disposable food tray of thermoplastic material having a main body portion and a rim surrounding the body portion, the rim having first and second pairs of opposed portions and the main body portion having a bottom wall connected to the rim by a rising wall. A first divider wall has sides that converge upwardly from the bottom wall and that merge with a flat top portion. The first divider wall has a nonlinear reversely curving configuration and is connected between one of the pairs of the opposed portions and to the bottom wall. A second divider wall, also, has sides that converge upwardly from the bottom wall and that merge with a flat top portion. The second divider wall has a nonlinear configuration and transversely intersects the first divider wall intermediate its ends and is connected between the second pair of opposed portions and to the bottom wall to form a food tray having at least four compartments. The tray is made of a thermoplastic material which decomposes under moderate heat so that after use the tray may be disposed of by burning.

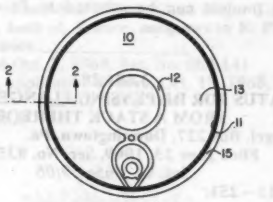
3,601,278
SEPARABLE MOLDED ARTICLE
Edmund H. Merz, Palos Park, and Howard M. Turner, Oak Forest, both of, Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Continuation-in-part of application Ser. No. 750,230, Aug. 5, 1968, now abandoned. This application Nov. 14, 1969, Ser. No. 876,623
Int. Cl. B65d *17/24, 41/00*
U.S. Cl. 220—53 22 Claims

An article of manufacture including a panel and a tear portion joined at an interface which forms a seal and a weakening line along which the tear is separable from the panel. The weakening line is formed by initially molding the panel or the strip portion to form one of the faces at the interface and



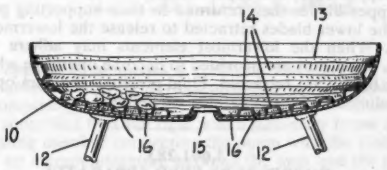
using this preformed face as a mold surface to form the complementary sealing face of the other.

3,601,279
SCORE-LINE STRUCTURE
David C. O'Neill, Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed June 30, 1969, Ser. No. 837,532
Int. Cl. B65d *17/24*
U.S. Cl. 220—54 4 Claims



A score line impressed into a container wall to define a dispensing opening. The score line has a radius along at least one edge of the bottom wall thereof to insure that tearing of the strip takes place along a predetermined path and so that the lower, flat portion of the score line is removed to thereby preclude the formation of a thin, sharp fin and thus reduce the cut hazard around the dispensing opening.

3,601,280
DISPOSABLE ALUMINUM LINER FOR BARBECUE
James R. Mills, 51 Glencairn Ave., Toronto 12, Ontario, Canada
Filed Feb. 27, 1969, Ser. No. 802,953
Int. Cl. B65d *25/14*
U.S. Cl. 220—63 R 1 Claim

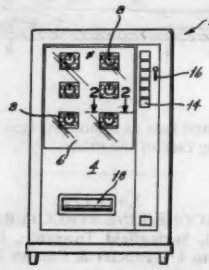


A flexible fire-resistant disposable liner for a portable barbecue, the liner being made of aluminum foil which is ribbed and shaped to fit snugly into the barbecue, the spaces between the ribs form passages below the fuel.

3,601,281
VENDING MACHINE WITH SCREW CONVEYOR-TYPE CELLULAR MAGAZINE
Stanley O. Schlaf, Rte. 1 Box 233, Winfield, Mo.
Filed Feb. 18, 1969, Ser. No. 800,181
Int. Cl. G07f *11/00*
U.S. Cl. 221—75 18 Claims

A vending machine having dispensing modules provided with upper and lower shelves. Each upper shelf is encircled

by the convolutions of a helical dispensing spindle. Items rest on both shelves intermediate the convolutions of the spindle, and, as the spindle revolves, items are discharged alternately from the ends of the upper and lower shelves with each 180° of rotation for the spindle. The spindle is connected with a



drive unit through a drive rod which extends beneath the upper shelf and merges into the last convolution at the discharge end of the spindle. With slight modifications the dispensing module can be adapted to fit existing vending machines.

3,601,282

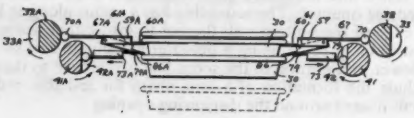
APPARATUS FOR DISPENSING FLANGED ELEMENTS FROM A STACK THEREOF

Leo G. Vogel, Box 227, Downingtown, Pa.

Filed June 23, 1969, Ser. No. 835,362

Int. Cl. B65g *59/06*

U.S. Cl. 211—251 **19 Claims**



Apparatus is disclosed for dispensing such flanged elements as trays and plates from a stack thereof. The apparatus has a pair of units spaced apart to receive the stack between them and each unit includes a pair of blades vertically spaced by a distance equal to the thickness of the margins of the elements and movable into and out of margin supporting position. Operating means provide a cycle in which the stack is first supported by the upper blades, then by the lower blades, the upper blades then returned to their supporting position and the lower blades retracted to release the lowermost element. When the lowermost elements may adhere to the stack, pry means are provided to become operative when the lower blades are retracted. Fluid-pressure and cam-operated embodiments of the apparatus are detailed.

3,601,283

BOBBIN TUBE FEED APPARATUS

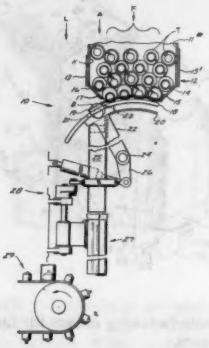
Carey A. Glazener, Seneca, and Lester W. Pray, Clemson, both of, S.C., assignors to Maremont Corporation, Chicago, Ill.

Continuation-in-part of application Ser. No. 798,389, Feb. 11, 1969, now Patent No. 3,531,016. This application Oct. 15, 1969, Ser. No. 866,660

Int. Cl. B65h *3/00*

U.S. Cl. 221—264 **6 Claims**

An improved bobbin tube feed apparatus is disclosed comprising a slope-walled hopper for containing tubes in an axially horizontal orientation and having at its bottom a slot of size sufficient to present a plurality of tubes exceeding three to a cradle therebeneath. The cradle has a convex nonslippery surface and is adapted for pivotable traverse across the hopper slot and therebeyond to a tube discharge position, and is formed with a receiving slot therethrough intermediate its ends for receiving one tube in horizontal position from the hopper. The received tube is retained within the cradle slot during traverse by a fixed member therebeneath which terminates at the discharge position and fixed guide members



on each side of the cradle below the hopper slot and extending therebeyond to overextend the discharge position. Strips of nonslippery material are provided on the convex confronting face of the cradle to aid in the deposition of a tube in the cradle slot.

3,601,284

FUEL SUPPLY CONTROLLING APPARATUS

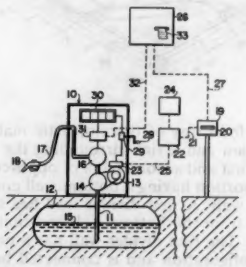
Shunro Yamawaki, Tokyo, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed Sept. 24, 1969, Ser. No. 860,616

Claims priority, application Japan, Jan. 20, 1969, 44/3997

Int. Cl. B67d *5/10*; **G07f** *13/00*

U.S. Cl. 222—2 **7 Claims**



A fuel supply controlling apparatus comprising a fuel supply controlling unit including a code number detection means into which a code board member having a shape corresponding to a specified code number is inserted whereby a fuel-supplying stand is activated to supply fuel, and a fuel supply recording unit in which the amount of supplied fuel and code numbers are automatically recorded after fuel is supplied.

3,601,285

METHOD AND SYSTEM FOR DISPENSING METERED AMOUNTS OF FLUID SUBSTANCES FROM BULK CONTAINERS

Asa L. Leger, 813 Glasgow Drive, Dallas, Tex.; Lee R. McElhaney, 7703 Bearden Lane, Dallas, Tex., and Jack D. NeSmith, 1431 Summit St., Mesquite, Tex.

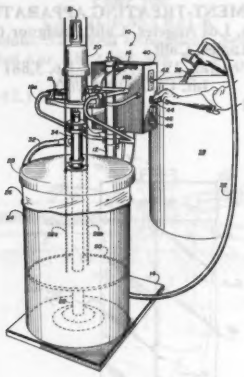
Filed May 14, 1969, Ser. No. 824,595

Int. Cl. B67d *5/30*

U.S. Cl. 222—20 **8 Claims**

A metered fluid-pumping system includes an upright support which may be selectively raised or lowered between two

extreme positions. An air-operated pump is attached to the upper portion of the support and is adapted to be lowered within an open-topped bulk fluid container. A flexible hose is attached to the output of the pump to enable selective dispensing of metered amounts of fluid from the bulk container. Structure is provided to meter selected amounts of fluid pumped from the container according to a preselected



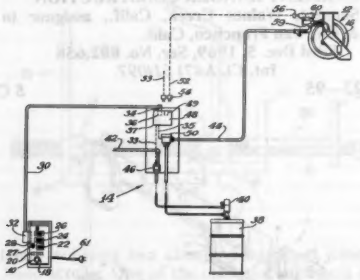
stored count and then to automatically shut off the pump. Structure is also provided which continuously senses the level of the fluid within the bulk container while providing a nonimpinging wiping action on the interior walls of the bulk container, and then automatically shuts the pump off when the fluid is substantially exhausted from the container without losing the stored count.

3,601,286

FLUID INVENTORY CONTROL SYSTEM

Wilbert G. Kautz, West Unity, Ohio, assignor to The Aro Corporation, Bryan, Ohio

Filed May 7, 1969, Ser. No. 822,425
Int. Cl. B67d *5/08*
U.S. Cl. 222—27 **3 Claims**



A fluid inventory control system is manufactured in modular sections and interconnected by single, multiwire cables having plugs attached to either end for the purpose of cooperating with plug receptacles incorporated with each section of the fluid inventory control system.

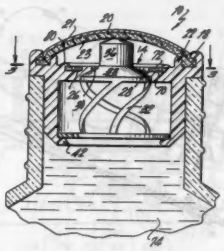
3,601,287

APPLICATOR FOR HEATED FLUIDS

Gilbert Schwartzman, 20 Wilmot Circle, Scarsdale, N.Y.

Filed Dec. 12, 1968, Ser. No. 783,194
Int. Cl. B67d *5/62*
U.S. Cl. 222—146 H **4 Claims**

An applicator for applying heated or foamed fluids including an applicator body having a retaining ring provided with a valve for controlling fluid flow. A substance for chemical



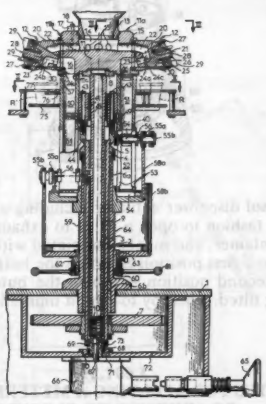
reaction with the fluid being dispensed to heat or foam the fluid is disposed outwardly of the valve.

3,601,288

VOLUMETRIC DRAWING-OFF ROTARY APPARATUS

Jean-Luc Berry, Mesnil-Sur-L'Estree, and Edgar J. Dardaine, Sorel-Moussel, both of, France, assignors to E. P. Remy & Cie, Dreux, France

Filed Oct. 2, 1969, Ser. No. 863,141
Claims priority, application France, Oct. 18, 1968, 170,469
Int. Cl. B67d *5/64*
U.S. Cl. 222—168.5 **16 Claims**



The apparatus comprises a revolving assembly on which are mounted dispensing devices arranged below a tank and each comprising a pump arranged vertically in which slides a piston controlled by a rail rigid with a stationary frame and a distributing member connecting the pump with the tank and setting up a communication between the tank and the pump or between the pump and the receptacle, said revolving assembly being formed of two elements adapted to rotate bodily and separable from one another, the distributing members being mounted on one of these elements while the pumps are mounted on the other element.

3,601,289

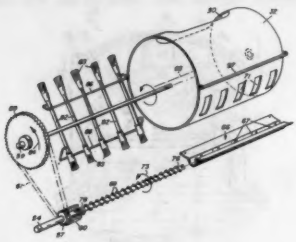
APPARATUS FOR DISTRIBUTING CHEMICALS

August W. Gustafson, Corpus Christi, Tex., assignor to Gustafson Manufacturing Company, Inc., Corpus Christi, Tex.

Filed Aug. 6, 1969, Ser. No. 848,044
Int. Cl. G01f *11/20*
U.S. Cl. 222—238 **3 Claims**

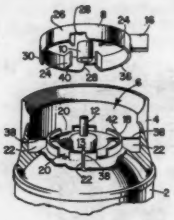
Apparatus for distributing minute quantities of pulverulent chemical materials in a uniform manner to the soil to inhibit

growth of certain types of vegetation and for distribution of chemicals for destroying organisms which attack agricultural crops. The chemical material moves from a hopper into a



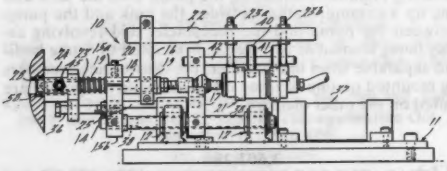
feed barrel and is discharged therefrom only when a helical member shifts the pulverulent material lengthwise of the barrel. A rod in the helical member has a flat face and serves to control the rate at which the chemical material is discharged.

3,601,290
AEROSOL DISPENSER ACTUATOR
Louis V. Nigro, Saugus, Mass., assignor to The Gillette Company, Boston, Mass.
Filed July 11, 1969, Ser. No. 841,029
Int. Cl. B65d *83/14*
U.S. Cl. 222—402.11 **6 Claims**



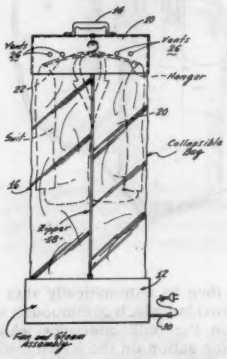
An aerosol dispenser actuator including a button movable in a tilting fashion to open a valve to exhaust contents of an aerosol container, and means associated with the button and rotatable to a first position in which the button may be tilted and to a second position in which the button is prevented from being tilted, whereby to inhibit unintended operation of the valve.

3,601,291
APPARATUS FOR APPLYING A METERED QUANTITY OF ADHESIVE TO CLOSURES
Edward A. Tessmer, 17103 Keppen, Allen Park, Mich.
Filed July 31, 1969, Ser. No. 846,494
Int. Cl. B67d *3/00*
U.S. Cl. 222—519 **11 Claims**



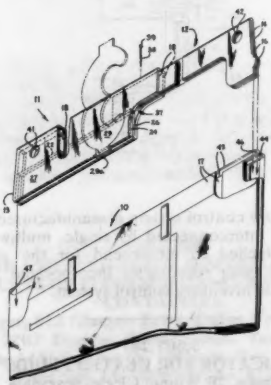
A rotary member having a discharge orifice for dispensing an annular bead of puttylike material upon rotation; the rotary member is mounted for reciprocal movement into and out of a retainer thereby closing and opening the orifice. A material receiving recess in the rotary member is connected to the orifice by a transfer passage. The recess is connected to a supply of material which fills it when the orifice is positioned inside the retainer. It is disconnected from the supply when the orifice is outside the retainer for dispensing at which time any material contained in the recess flows through the transfer passage and is dispensed at the orifice upon rotation of the rotary member.

3,601,292
GARMENT-TREATING APPARATUS
William W. Bliss, Los Angeles, Calif., assignor to BKG Incorporated, Los Angles, Calif.
Filed Jan. 19, 1970, Ser. No. 3,881
Int. Cl. A41h *43/00*
U.S. Cl. 223—51 **1 Claim**



A garment-treating apparatus is provided which has a top and a bottom, and which also has sides defining a chamber between the top and bottom in which a suit, or other garment to be pressed, is hung. The apparatus includes a steam generator at the bottom which fills the chamber with steam to moisten and take the wrinkles out of the garment in the chamber, and it also includes a fan in the bottom which subsequently blows warm air through the chamber to dry out the steamed garment.

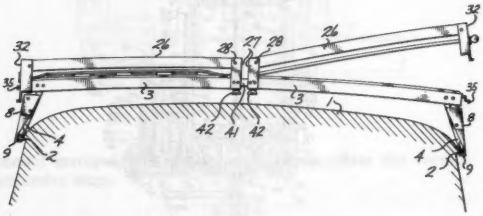
3,601,293
GARMENT HANGER CONSTRUCTION
Jerry J. Sargent, Walnut Creek, Calif., assignor to Levi Strauss & Co., San Francisco, Calif.
Filed Dec. 5, 1969, Ser. No. 882,658
Int. Cl. A47j *51/097*
U.S. Cl. 223—95 **5 Claims**



A garment hanger construction formed of corrugated cardboard folded in two pieces, one of which forms a sheath and

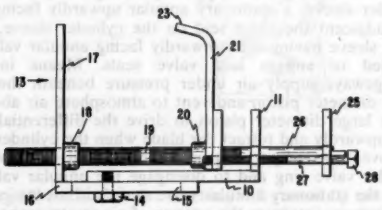
the other of which forms an extensible arm whereby the two pieces can be extended within the waistband of a garment, extended to tighten the waistband of a garment, and then locked in position by means of a straight pin to hold the garment in that form. The sheath includes a foldable hook portion which serves to support the garment from a transverse support rod of conventional type.

3,601,294
CAR TOP SKI RACK
Donald J. Gjesdahl, 320 West Republican, Seattle, Wash.
Filed Apr. 18, 1969, Ser. No. 817,383
Int. Cl. B60r *9/04*
U.S. Cl. 224—42.1 F **3 Claims**



Opposite ends of a lower rack bar are supported in gutters of a car top by feet inserted in the gutters. Each foot is secured in place by a clamping cover having a flange engaged beneath the gutter and slid into clamping engagement with the gutter by a screw between the leg and cover and having a head above the lower rack bar. An upper rack bar can be locked to the lower rack bar in a position covering the clamping screwhead to prevent access to it.

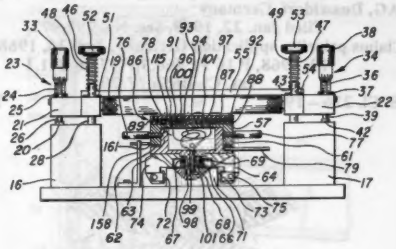
3,601,295
CLAMPING DEVICE
Lyall L. Lowe, 517 Dakota Ave., South Sioux City, Nebr.
Filed Mar. 6, 1969, Ser. No. 804,970
Int. Cl. B60r *9/00*
U.S. Cl. 224—42.45 R **6 Claims**



A clamp including two clamping members joined by opposite hand screws. One of the clamping members carries an additional clamp so that by clamping the first two members to an automobile, a carrier device can be carried by the automobile by means of being clamped in the second clamp.

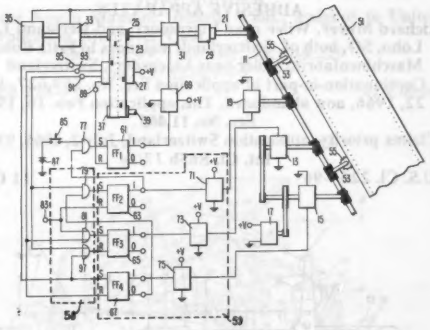
3,601,296
DEVICE FOR BREAKING SCRIBED SLICES OF SEMICONDUCTOR MATERIAL
Eric G. Pick, Dallas; Jerry B. Medders, Van Alstyne, and Lawrence T. Loftus, Jr., Garland, all of, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Dec. 30, 1968, Ser. No. 787,834
Int. Cl. B26f *3/00*
U.S. Cl. 225—103 **15 Claims**

A device for breaking scribed slices of semiconductor material to produce individual bars of the semiconductor material by moving a force applying member, the force exerted by which is predetermined, such as an adjustable spring



biased roller, over a scribed slice of semiconductor material supported by a platen which preferably is covered with an elastomeric pad.

3,601,297
DUAL SPEED PAPER ADVANCE SYSTEM WITH SKIP TO FORMAT HEADING
John W. Funk, Dearborn; Dean P. Scott, Livonia, and James S. McCoy, Detroit, all of, Mich., assignors to Burroughs Corporation, Detroit, Mich.
Filed Dec. 18, 1968, Ser. No. 784,685
Int. Cl. B65h *25/00*
U.S. Cl. 226—9 **16 Claims**



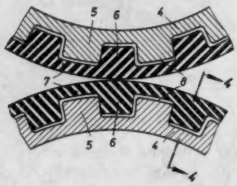
A mechanism for controllably advancing web material of indeterminate length, such as paper from a roll, according to a predetermined format and at different speeds. The format information is carried by an endless tape which is normally driven in synchronism with the web and which controls electromagnetic drive clutches and a brake through electronic circuitry. The operation of the brake and clutches controls the distance that the web travels from the generation of a stop signal until the web is actually stopped, and also regulates the longitudinal force on the paper, by controlling the acceleration and deceleration, to prevent tearing when the web is started, stopped, or when the speed of the web is changed. The format tape may be advanced to the format heading independently of the web drive by clutch means for disengaging the format tape from the synchronous drive and by engaging a small motor for independently driving the tape. The tape stops at its format heading automatically as a result of a control signal developed from the tape itself.

3,601,298

APPARATUS FOR UNIFORMLY PULLING FORWARD INDIVIDUAL LAYERS OF A MULTILAYER WEB OF PAPER, CARDBOARD OR THE LIKE MATERIALS

Peter Schulze, Dusseldorf-Wersten, and Walter Heidepriem, Dorsten, both of, Germany, assignors to Jagenberg-Werke AG, Dusseldorf, Germany

Filed Jan. 22, 1969, Ser. No. 792,977
Claims priority, application Germany, Jan. 24, 1968, Sept. 19, 1968, P 16 11 768.3;P 17 86 341.1
Int. Cl. B65h *17/20*
U.S. Cl. 226—191 7 Claims



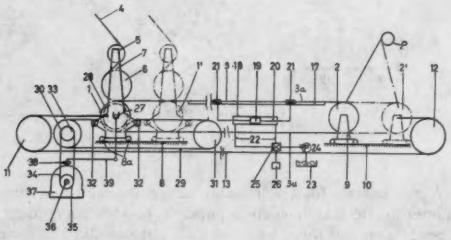
Apparatus for uniformly pulling forward or feeding individual layers of a multilayer web of paper, cardboard and the like materials which includes cooperative roller means that engage opposite surfaces of the web and which roller means are provided with elastic jackets and means establishing an air cushion beneath the jackets so that during pulling forward or feeding relative displacement in the feeding direction of the individual layers of the multilayer web is prevented by reason of the improved contact relationship in the feeding zone between the jackets and the opposite surfaces of the multilayer web.

3,601,299

CONTINUOUSLY OPERATING THERMOPLASTIC ADHESIVE APPARATUS

Richard Murer, Wiler near Utzensdorf, and Hermann Leiser, Lohn, SO, both of, Switzerland, assignors to Fritz Buser AG Maschinenfabrik, Wiler near Utzensdorf, Switzerland

Continuation-in-part of application Ser. No. 559,627, June 22, 1966, now abandoned. This application Feb. 16, 1970, Ser. No. 11,463
Claims priority, application Switzerland, July 2, 1965, 9302/65
Int. Cl. B65h *17/24*
U.S. Cl. 226—96 11 Claims



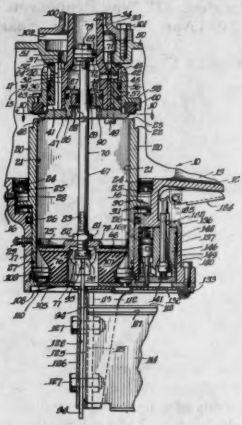
A continuously operating apparatus for advancing a web by adhesively securing the same to a transport band such as a conveyor belt, coated on one side with a layer of thermoplastic adhesive which includes a pair of guide roll means over which such a transport band is trained with the layer of adhesive exposed, means for feeding a textile web onto said transport band, a heating roll means for heating said layer of adhesive, means for applying a contact pressure between said band and textile web to bond the band and web to one another as the web passes said heating roll means and means for controlling the contact pressure between the textile web and the transport band as a function of the speed of movement of said textile web past said heating roll means in order to achieve a substantially uniform adhesive force between said web and said layer of adhesive on said transport band.

3,601,300

PNEUMATICALLY OPERATED NAILING MACHINE

Edgar P. Anstett, 21 Lakewood Place, Highland Park, Ill.

Filed Jan. 23, 1970, Ser. No. 5,195
Int. Cl. B27f *7/02*
U.S. Cl. 227—8 37 Claims



A pneumatically operated nailing machine includes a reciprocatable blade for driving nails when advanced and a reciprocatable differential piston unit connected to the blade advances and retracts the blade. A cylinder member reciprocatingly receives the upper small diameter piston of the differential piston unit and a reciprocatable cylinder sleeve reciprocatingly receives the lower large diameter piston thereof. Sealing means seals the cylinder for the lower large diameter piston from the cylinder for the upper small diameter piston. Valving means for the differential piston unit include an annular upwardly facing valve seat on the cylinder sleeve, a stationary annular upwardly facing valve seat adjacent the valve seat on the cylinder sleeve, and a valve sleeve having a downwardly facing annular valve ring adapted to engage said valve seats. Means including passageways supply air under pressure beneath the upper small diameter piston and vent to atmosphere air above the lower large diameter piston to drive the differential piston unit upwardly and retract the blade when the cylinder sleeve is moved upwardly to engage its annular valve seat with the annular valve ring and to disengage the annular valve ring from the stationary annular valve seat. Said means including passageways interrupt the venting of air to atmosphere from above the large diameter piston and supply air under pressure above the large diameter piston to drive the differential piston unit downwardly and advance the blade when the cylinder sleeve is moved downwardly to engage the annular valve ring with the stationary annular valve seat and to disengage its annular valve seat from the annular valve ring. Means including control valve means selectively move the cylinder sleeve and valve sleeve upwardly and downwardly.

3,601,301

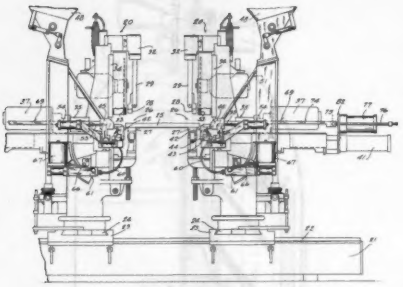
FURNITURE PIECE FABRICATING MACHINE

Alfred J. Backus, Oshkosh, Wis., assignor to Medalist Industries, Inc., Milwaukee, Wis.

Filed Apr. 16, 1969, Ser. No. 816,488
Int. Cl. B27f *4/00*
U.S. Cl. 227—14 12 Claims

This disclosure relates to a furniture piece fabricating machine having a piece clamping station at which the piece is cut off, dowel-receiving holes bored therein, glue injected

into the bores, and dowels set into the bores, all in successive operations at the same station and without requiring any manual manipulation of the piece intermediate the various successive steps.

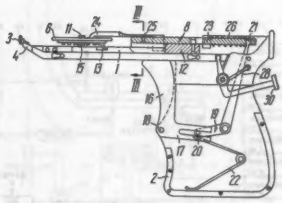


3,601,302

SURGICAL INSTRUMENT FOR STITCHING SOFT TISSUES BY MEANS OF STAPLES

Lidia Alexandrovna Potekhina, Orlovo-Davydovsky pereulok, 2/5 kv. 34; Georgy Vasilievich Astafiev, Rizhsky proezd, 7, kv. 108; Svetoslav Ivanovich Babkin, ulitsa Dmitria Ulyanova, 9/11, korpus I, kv. 16, and Ivan Alexandrovich Korolkov, Prospekt Mira, 186, kv. 14, all of Moscow, U.S.S.R.

Filed Oct. 22, 1968, Ser. No. 769,619
Claims priority, application U.S.S.R., Oct. 23, 1967, 1192182
Int. Cl. B25c *5/02*
U.S. Cl. 227—120 **7 Claims**



A surgical instrument for stitching soft tissues by means of staples in which the magazine for the staples is made in the form of a turning disk provided with circumferentially arranged slots for storing the staples and equipped with a mechanism for automatic rotation of the disk, thus providing for dependable delivery of the staples to the section of the tissue being stitched.

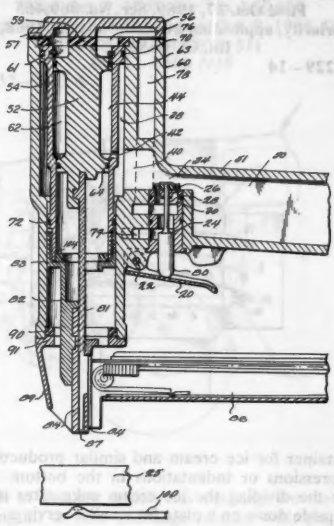
3,601,303

SHUTTLE NOSE PNEUMATIC FASTENER DRIVER

Earl G. Leach, deceased, late of Framingham, Mass. (by Ruth H. Leach, Administratrix), and Edward I. Fisher, Westerly, R.I., assignors to Textron Inc., Providence, R.I.

Filed July 26, 1968, Ser. No. 749,916
Int. Cl. B25c *5/02*
U.S. Cl. 227—124 **10 Claims**

The invention relates to a fluid-pressure-operated device for driving fasteners through material whereby a shuttle piston pushes a shuttle towards the material to compress the material against a fixed clincher and a driver piston pushes a driver blade towards the material to drive a fastener into the material after the shuttle has compressed it. In the embodiment described in detail the pistons are of the differential type and move linearly and with a constant angularity with respect to the clincher.

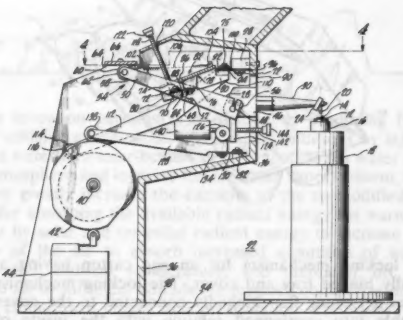


3,601,304

WIRE BONDER

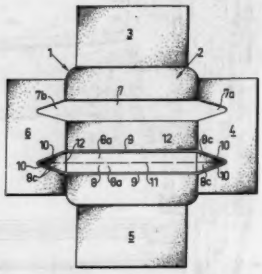
Momtaz Nosshi Mansour, Duarte, Calif., assignor to Unitek Corporation, Monrovia, Calif.

Filed July 19, 1968, Ser. No. 746,229
Int. Cl. B23k *1/06, 5/20*
U.S. Cl. 228—1 **11 Claims**



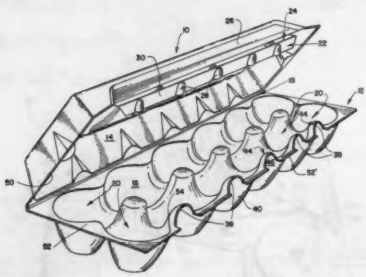
A wire bonder having a housing, a manipular workpiece-mounting post secured to the housing and a bonding tip reciprocally movable relative to the mounting post. The bonding tip is secured in a holder connected to an ultrasonic transducer and the assembly is in turn operatively engaged with a drive mechanism for reciprocating the bonding tip which includes a first linkage which is secured to a first leaf spring flexibly attached to the housing. Flexibly attached to the first linkage by a second leaf spring is another linkage, one end of which movably engages a planar surface of the housing and another end of which mounts the transducer and tip assembly.

3,601,305
PACKAGE PREFERABLY INTENDED FOR ICE CREAM AND SIMILAR PRODUCTS
Boye Benzon-Petersen, Lund, Sweden, assignor to AB Akerlund & Rausing, Lund, Sweden
Filed Oct. 27, 1969, Ser. No. 869,465
Claims priority, application Sweden, Nov. 25, 1968, 15994/68
Int. Cl. B65d *5/56*
U.S. Cl. 229—14 **6 Claims**



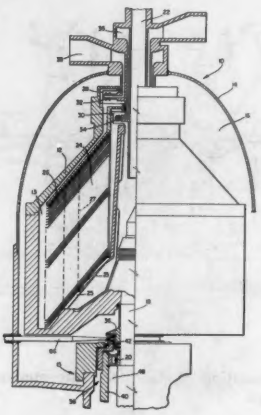
A container for ice cream and similar products provided with depressions or indentations in the bottom thereof to facilitate the dividing the ice cream cake after it has been turned upside down on a plate for smaller servings.

3,601,306
LOCKING MECHANISM FOR EGG CARTONS
Theodore P. Martens, Pittsburgh, Pa., and James R. Patton, Houston, Tex., assignors to Sinclair-Koppers Company, Pittsburgh, Pa.
Filed July 15, 1969, Ser. No. 841,721
Int. Cl. B65d *1/36*
U.S. Cl. 229—44 R **7 Claims**



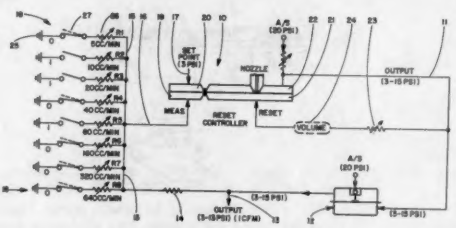
A locking mechanism for an egg carton having an integrally hinged tray and cover. The locking mechanism includes a locking flap hingedly connected to the cover and foldable into overlapped relation with the inside of the cover's front wall and locking detents projecting inwardly from the inner surface of the folded flap. The carton is secured shut by interlockingly engaging the locking detents with the underside of a raided lip on the front wall of the carton's tray.

3,601,307
CENTRIFUGE WITH SPINDLE-SEALING MEANS
Leonard Shapiro, Upper Darby, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.
Filed Mar. 19, 1970, Ser. No. 20,955
Int. Cl. B01d *21/26, 43/00, 45/12*
U.S. Cl. 233—1 **10 Claims**



A sealing structure is provided between a centrifuge bowl and its surrounding cover to prevent process fluids existing between the centrifuge bowl and the cover from vibrating lubricant surrounding the bearings for the main spindle.

3,601,308
DIGITAL TO PNEUMATIC ANALOG CONVERTER
Richard W. Hatch, Jr., Foxboro, Mass., assignor to The Foxboro Company, Foxboro, Mass.
Filed June 19, 1969, Ser. No. 835,312
Int. Cl. G06d *3/00*
U.S. Cl. 235—200 **1 Claim**

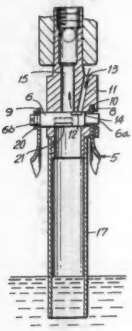


The combination of a digital input matrix of fluidic resistances and a pneumatic analog controller, with a manifold supply to the resistances maintained at constant pressure by the controller, and a pneumatic analog output to a value established by the controller change necessary to maintain the manifold pressure.

3,601,309
STEAM TRAP WITH A FLOAT-OPERATED SLIDE VALVE
Hans Richter, 28 Bremen, Reinthalerstrasse, 6, Bremen, Germany
Filed Oct. 30, 1969, Ser. No. 872,533
Int. Cl. F16t *1/08*
U.S. Cl. 236—59 **14 Claims**

A steam trap employs a rotatable and slidable valve to open and close the outlet of a condensate chamber and to vent the outlet at low temperature. The valve is connected to a float which controls opening and closing of the outlet by

rotating the valve, the connection between the float and the valve being made by a pair of arms at least one of which is



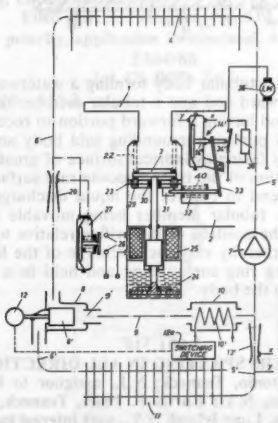
bimetallic so as to respond to temperature differences and laterally shift the valve to control the venting.

3,601,310

APPARATUS FOR CONTROLLING THE SUPPLY OF GAS TO INSTANT WATER HEATERS IN CIRCULATION HEATING SYSTEMS

Georg Hein, Remscheid, Germany, assignor to Joh. Vaillant KG, Remscheid, Germany

Filed Oct. 28, 1969, Ser. No. 871,937
Claims priority, application Germany, Nov. 26, 1968, P 18 10 900.7
Int. Cl. F24d *3/08*
U.S. Cl. 237—8 R **1 Claim**



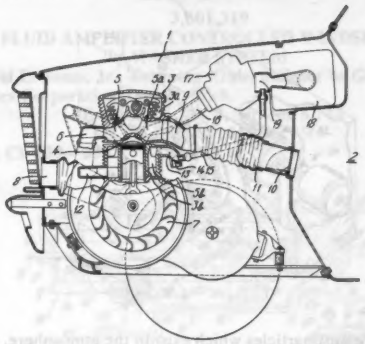
A pump circulates hot water in a system including a gas fired heater and a radiator. A bypass is across the radiator and includes a heat exchanger for heating domestic water. A flow control in the system opens the bypass and shuts off flow to the radiator when domestic water is drawn. A gas rate of flow control provides full gas supply when the radiator is cut off and reduced gas supply when water flows through the radiator. The motor for the blower for removing gaseous products of combustion is at relatively high speed when there is full gas supply and at a comparatively lower speed when there is reduced gas supply.

3,601,311

ENGINE COOLING AND PASSENGER COMPARTMENT HEATING APPARATUS

Soichiro Honda, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 9, 1969, Ser. No. 865,000
Claims priority, application Japan, Oct. 9, 1968, Oct. 12, 1968, 43/73,144;43/74, 511
Int. Cl. B60h *1/16*
U.S. Cl. 237—12.3 A **3 Claims**



An engine of a motor vehicle has a passage for the flow of fresh cooling air in heat exchange relation with the engine, the passage being closed and isolated from a joint between the engine block and the cylinder head to preclude entry into the passage of gases leaking past the joint. The passage leads to a passage compartment of the vehicle for heating the interior thereof.

3,601,312

METHOD OF INCREASING THE LIKELIHOOD OF PRECIPITATION BY THE ARTIFICAL INTRODUCTION OF SEA WATER VAPOR INTO THE ATMOSPHERE WINDWARD OF AN AIR LIFT REGION

Orval R. Feather, 2464 Bunker Hill, Ann Arbor, Mich.

Filed Apr. 28, 1969, Ser. No. 819,625
Int. Cl. A01g *15/00*
U.S. Cl. 239—2 **7 Claims**

The invention pertains to a method of producing fresh water utilizing modification of air mass conditions by injecting sea water into solar-heated air to evaporate sea water into the atmosphere and increase the air water vapor content, and thereby greatly increase the capacity of the so modified air mass for absorbing the available radiant energy for warming the air by solar and terrestial radiant energy to increase the ability of the air to absorb increased quantities of water vapor and ambient temperature, and thereafter lift the treated air to sufficient altitudes to produce convective instability, cumuliform clouds and precipitation. Preferably, the injection of sea water into the atmosphere, and the solar heating thereof, occur at alternate land areas disposed windwardly of a mountain or other natural orographic barrier wherein the treated air is lifted orographically.

3,601,313

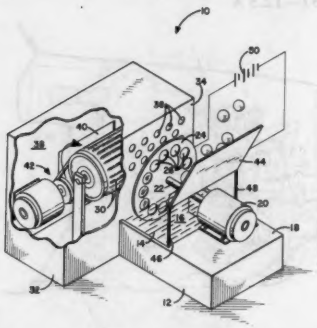
METHOD AND MEANS FOR THE REMOVAL OF LIQUID OR SOLID PARTICLES FROM A VOLUME OF GAS

T. G. Owe Berg, 14361 Deanann Place, Garden Grove, Calif.

Filed June 17, 1969, Ser. No. 833,993
Int. Cl. A01g *15/00*
U.S. Cl. 239—2 **14 Claims**

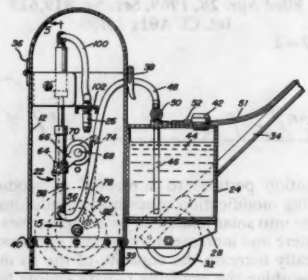
There is disclosed a method for the removal of liquid or solid particles from a volume of gas by generating a mul-

tiplicity of charged, individual bubbles, the bubbles being substantially larger than the particles, and introducing the charged bubbles into the volume of gas. The bubbles are either hollow liquid bodies or hollow solid bodies. Means are also disclosed for generating and electrically charging bubbles. According to a first embodiment of the invention, the particles are fog droplets and the method and means are used to disperse the fog. According to a second embodiment, the



particles are dust particles which exist in the atmosphere, and the method and means are used to collect and remove the dust. According to a third embodiment, the method and means are used to clean dust particles from effluent gases such as those resulting from combustion processes. According to a fourth embodiment, the method and means may be used to collect particles during chemical manufacturing processes.

3,601,314
SPRAYING APPARATUS WITH CONFINING SHIELD
Arthur A. Hurt, 1608 E. 4th Ave., Spencer, Iowa
Filed Aug. 25, 1969, Ser. No. 852,726
Int. Cl. B05b *9/06*
U.S. Cl. 239—157 **6 Claims**



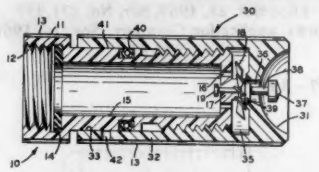
A wheel-mounted housing having an open underside confronting a supporting surface to be treated with material. A pump is mounted to the housing and a crank and pitman assembly connect one wheel to the pump to cause operation thereof. A storage tank with treating material is connected to the housing and conduit means provides passage of material from the tank to the pump. The output of the pump is connected to a spraying nozzle toward the supporting surface upon which the wheeled housing rides.

3,601,315
POCKET SUPPORTABLE ATOMIZER DEVICE
George H. Montalbo, 1667 W. 208th St., Torrance, Calif.
Filed Jan. 21, 1970, Ser. No. 4,617
Int. Cl. B05b *1/00*
U.S. Cl. 239—211 **5 Claims**

A pocket supportable atomizer device for dispensing a predetermined quantity of liquid as a spray by actuation of a

plunger that forms a part of the device, and the device in appearance simulating that of a conventional fountain pen.

3,601,316
COMBINED NOZZLE AND SPRINKLER
Jerome L. Murray, 652 1st. Ave., New York, N.Y.
Filed Apr. 17, 1969, Ser. No. 817,084
Int. Cl. B05b *3/04*
U.S. Cl. 239—222.17 **2 Claims**



A nozzle with a tubular body forming a waterway with an orifice at its forward end and a tubular member telescoping over the body and having a forward portion to receive liquid and a backward portion surrounding said body and formed with an inwardly facing cylindrical surface of greater diameter than the portion of the body opposite said surface, means at the forward end to control the liquid discharge through said orifice, the tubular member being movable along the body to adjust the position of the orifice relative to the control means and thereby vary the discharge of the liquid, and an elastic sealing ring surrounding and held in a relatively fixed position on the body.

3,601,317
ATOMIZERS SPRAYING IN ALL DIRECTIONS
Anthony Genantonio, Teaneck, N.J., assignor to George X. Batlas, Astoria, N.Y.; Curtis F. Pearl, Teaneck, N.J. and Vincent Longo, Long Island, N.Y., part interest to each
Filed Mar. 9, 1970, Ser. No. 17,743
Int. Cl. B65d *1/32*
U.S. Cl. 239—327 **4 Claims**

A resilient squeeze bottle has a relatively very short stopper provided with a stepped central bore whose upper end is a spray discharge nozzle leading from a mixing chamber. Said stopper mounts a slim tube which extends downwardly to very near the bottle's floor and is communicative with the mixing chamber. Said stopper also mounts a main air tube which is about and spaced from said slim tube, and extends downwardly to a bit below the halfway mark of the space available in the bottle when the device is assembled. Stopper construction affords a duct system making the upper part of the main air tube communicative with the mix-

ing chamber, and included in such system, are ducts opening in the bottom of the stopper, making the upper end of said main air tube communicative with the bottle's interior at bottleneck region. Bottle shape is such that the level of the liquid supply therein, which is below the air tube when the

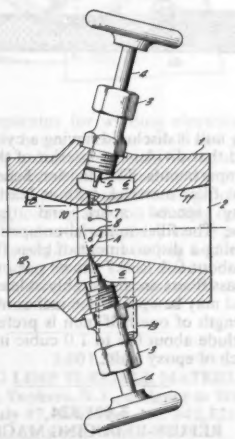
bottle is erect, shall always be below said air tube regardless of the position the bottle is held in hand. Bottle height is relatively tall so there is an appreciable distance between the bottom ends of said tubes, and also an appreciable distance between the bottom end of said air tube and the lower end of the stopper.

3,601,318

METHOD AND APPARATUS FOR CONTINUOUS MIXING OF LIQUIDS

Albert Gehring, Tamins/Gr.; Max Kugler, Domat-Ems/Gr., and Hans-Joachim Schultze, Chur/Gr., all of, Switzerland, assignors to INVENTA AG fur Forschung und Patentverwertung, Zurich, Switzerland

Filed Apr. 3, 1969, Ser. No. 813,149
Claims priority, application Switzerland, Apr. 11, 1968, 5504/68
Int. Cl. B05b *7/12*
U.S. Cl. 239—416.2 **12 Claims**



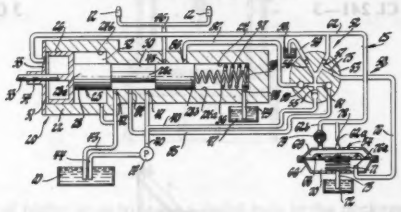
Apparatus and method for mixing of a feed liquid with a process liquid comprising a pipe having a cylindrical bore, said process liquid flowing in the pipe, a throat in the bore, the portion of the bore downstream of the throat and forming an angle between said portion and the axis of said bore of up to about 15°, at least one feed nozzle for injection of said feed liquid disposed in said pipe and extending between a source of feed liquid and the bore, the nozzle opening into the bore at the throat and being cylindrical in cross section, the axis of the nozzle forming a second angle with a portion of the axis of the bore upstream of the nozzle, the second angle being from 30°–90° whereby said feed liquid is injected at a velocity of from 2 to 15 times the velocity of the process liquid.

3,601,319

FLUID AMPLIFIER CONTROLLED WINDSHIELD WASHER SYSTEM

David L. Jones, Jr., Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 26, 1970, Ser. No. 5,718
Int. Cl. B05b *1/10;* **B60s** *1/46*
U.S. Cl. 239—284 **5 Claims**



In a preferred form, this disclosure relates to a washer system for delivering washer fluid to transparent surface areas such as different areas of a windshield or headlamps of an automotive vehicle. The washer system includes a reservoir containing a supply of washer fluid, nozzle means adapted to be positioned adjacent the transparent surface areas to be cleaned, a pump means for supplying washer fluid under pressure from the reservoir to the nozzle means, and a selectively operable control means including a fluid amplifier for controlling communication between the pump and the nozzle means and which is selectively operable to provide either a demand wash cycle or a programmed wash cycle of a predetermined duration.

3,601,320

APPARATUS FOR BREAKING UP A DIRECTIONAL FLUID STREAM

Neil M. Du Plessis, Sesde laan 2, Boston, Bellville, Cape Province, South Africa

Filed June 11, 1969, Ser. No. 832,070
Claims priority, application South Africa, June 26, 1968, 68/4093
Int. Cl. B05b *15/00*
U.S. Cl. 239—542 **2 Claims**

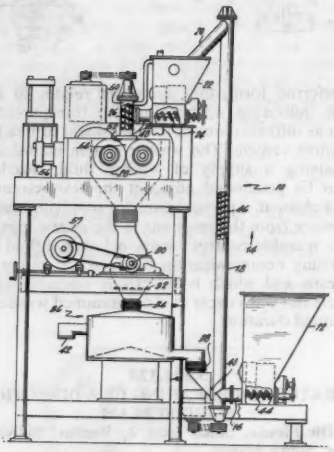
The apparatus comprises a passage for inflow of a fluid into a volume surrounded by a wall having a plurality of holes in it which admit the fluid to a second volume also surrounded by a wall having a plurality of holes in it in positions which are other than in the direct flow direction of fluid issuing from the holes in the walls surrounding the first volume.

The preferred embodiment comprises two tubes, both closed at one end by a single closure component and the volume between them closed at the other end by a component which also incorporate an internally threaded passage for the inflow of fluid adapted to be screw connected on to a source of the fluid. The holes in the two pipes are staggered both axially and angularly in such a manner that if the angular staggering is carried out incompletely or not at all due to prior assembly during manufacture the axial staggering nevertheless provides that the holes of the two pipes are still in positions other than the direct flow direction.

3,601,321
PROCESS FOR PREPARING GRANULAR DENTURE CLEANSER

Jordan B. Barth, East Brunswick, and Philip A. Ouellette, Rahway, both of, N.J.

Filed Apr. 14, 1969, Ser. No. 815,635
Int. Cl. B02c *13/13, 21/00*
U.S. Cl. 241—3 **3 Claims**



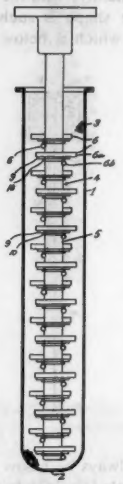
Process for preparing a granular denture cleanser composition of the effervescent gas liberating-type which when dissolved in water will remove oral deposits and stains from removable dentures soaking in the solution. The process comprises homogenizing and levigating the powdered components of the composition, extruding the composition mixture into a dense sheet of material and grinding the sheet of material into granules of a desired particle size. Granules of the desired size are then separated from oversized and undersized particles and collected as product while the oversized and undersized particles are reprocessed.

3,601,322
FINE GRINDING APPARATUS

Andrew Szegvari, 201 Castle Blvd., Akron, Ohio

Filed July 16, 1968, Ser. No. 745,150
Claims priority, application Great Britain, July 17, 1967, 32770/67
Int. Cl. B02c *17/16*
U.S. Cl. 241—46 **17 Claims**

An apparatus for fine grinding using spherical agitating elements maintained in kinetically activated condition within a liquid by agitating means comprising arms or the like attached to a central vertical shaft, discs are provided around

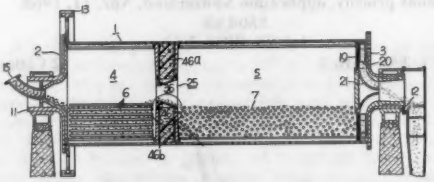


the shaft at intervals to prevent liquid containing the agitating elements from rising adjacent the shaft.

3,601,323
FILLER MATERIAL FOR GRINDING MILLS AND THE LIKE

Donald P. Giencke, Milwaukee, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Dec. 11, 1969, Ser. No. 884,148
Int. Cl. B02c *17/06*
U.S. Cl. 241—70 **4 Claims**



A grinding mill is disclosed having a cylindrical shell and a division head that divides the interior of the shell into axially disposed compartments. The division head is an assembly of elements and filler material, with at least a pair of the elements being spaced apart and the filler material therebetween. The filler material comprises hardened epoxy resin containing a dispersement of glass fibers in an amount of between about 0.4 to 0.7 grams per cubic inch of epoxy resin. The glass fibers are preferably at least about one-fourth inch long and may be up to three inches in length, although a maximum length of one-half inch is preferred. The material may also include about 0.6 to 1.0 cubic inches of silica sand per cubic inch of epoxy resin.

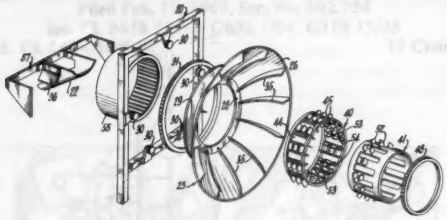
3,601,324
REFUSE-REDUCING MACHINE

George B. Brown, 63 Oxford Street, Glen Ridge, N.J.

Filed Mar. 9, 1970, Ser. No. 17,604
Int. Cl. B02c *13/10*
U.S. Cl. 241—163 **19 Claims**

The invention contemplates refuse-reducing mechanism employing relatively rotating coaxial structures to achieve a succession of stages of progressive size reduction, as refuse is

conveyed through or shredded in the mechanism. At one general axial span, plural reduction stages proceed radially inwardly, from a load in zone at maximum diameter. After such reduction, the reduced material may be axially transposed to a second general axial span for further reduction,



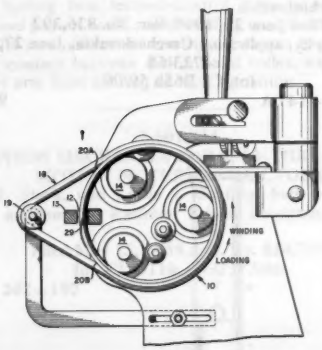
again with radially inward progression. Thus reduced, the material may be delivered for storage or for still further reduction or other processing, as desired. The entire multistage reducer is conveniently built into a vehicle body or trailer, or it may be used in stationary applications, as for apartment houses, hospitals, grocery stores and the like.

3,601,325

COIL WINDER BELT GUIDE SHUTTLE SYSTEMS

Vilmos Havasi, and Leon Yarrish, both of Danbury, Conn., assignors to The Jovil Manufacturing Co., Inc., Danbury, Conn.

Filed June 5, 1969, Ser. No. 830,790
Int. Cl. H01f *41/08*
U.S. Cl. 242—4 **9 Claims**



Methods and apparatus for winding electrical conductor wire of moderate to heavy sizes on small and miniature toroidal cores utilizing a sliderless shuttle having storage coil of wire wound in a peripheral groove and held therein by a belt encircling a substantial part of the shuttle groove periphery. To permit mounting, loading and coil winding operations, the belt diverges from the shuttle periphery at the point where it passes through the toroidal core. Loading and winding rotation of the shuttle occur in the same direction, significantly minimizing flexure and bending distortion of the conductor wire as it is drawn from the shuttle groove.

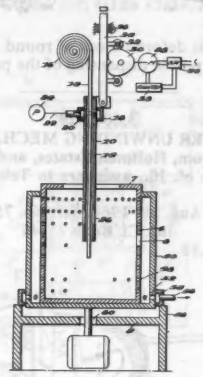
3,601,326

WINDING LIMP FLEXIBLE MATERIAL

William F. Gordon, Yonkers, N.Y., assignor to Windings, Inc.

Filed July 17, 1969, Ser. No. 842,521
Int. Cl. B65h *54/80, 55/00*
U.S. Cl. 242—18 **5 Claims**

A package of limp material is wound on the inside of a rotating drum or container having an opening in its wall substantially centrally of its length by feeding the material while conveyed by a current of air through and out of a tube which extends into an opening in one end of the drum which is reciprocated back and forth. The ratio between the number of rotations of the drum per unit of time and the number of reciprocations of the tube is substantially equal to an integral multiple of one-half, so that the limp material is laid up inside the drum in a series of figure-8 bights. The relative speeds of rotation and reciprocation are varied at one point in each



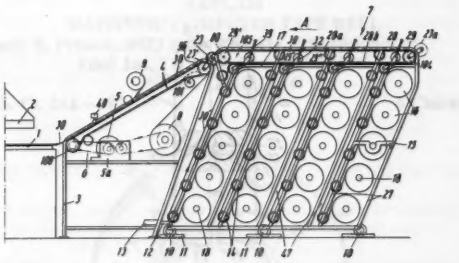
layer of bights so as to leave a radial hole in the package opposite the hole in the container through which the inner end of the material is paid out for twistless payout. The container is foraminous and a suction is applied to the outside to assist in laying the material in the inside of the wall.

3,601,327

APPARATUS FOR STORING AND FOR TRANSPORTING WEBS TO A CUTTING DEVICE

Wilfried Baumann, Bredenweg 134a, 4801 Hoberge-Uerentrup, Germany

Filed Mar. 21, 1969, Ser. No. 809,157
Int. Cl. B65h *75/00*
U.S. Cl. 242—55 **31 Claims**



An apparatus for storing webs, especially fabric webs and for transporting such webs superimposed upon each other to a cutting device, wherein the webs are wound up on a plurality of rolls carried by a frame and wherein the webs are withdrawn by withdrawing means from the rolls and guided in superimposed position onto an endless conveyor which transports the superimposed webs to the cutting device.

3,601,328

ROLLER ASSEMBLY FOR PAPER ROLLS

Beach McClung, 1428 Amsterdam Road, Park Hills, Covington, Ky.

Filed June 20, 1969, Ser. No. 835,065
Int. Cl. A47k *10/22, 10/32;* **B65h** *19/00*
U.S. Cl. 242—55.2 **2 Claims**

A roller assembly is disclosed for use with paper rolls. The

rollers are shaped for ease in insertion in the paper rolls even

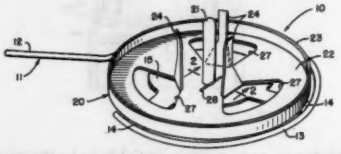
if the inner core is deformed out of round. Use of the rollers assures a smooth pull in dispensing of the paper.

3,601,329

CENTER UNWINDING MECHANISM

Arthur A. Hagstrom, Hoffman Estates, and Robert J. Ramig, Jr., Niles, both of, Ill., assignors to Teletype Corporation, Skokie, Ill.

Filed Aug. 29, 1968, Ser. No. 756,158
Int. Cl. B65h *17/48*
U.S. Cl. 242—55.18 **9 Claims**



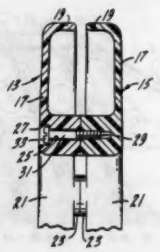
A center unwinding mechanism including a tape reel comprised of a pair of separable flanges and a winding hub attached to one of the flanges and a rotatably supported turntable having three fingers extending cantilever from it for receiving the reel with the fingers extending through the hub and for permitting removal of one of the flanges and the hub from the reel while the reel is mounted on the turntable.

3,601,330

FISH TAPE WITH ADJUSTABLE TAPE ENGAGING LIPS

Mickey M. Minobe, Banning, Calif., assignor to Ideal Industries, Inc., Sycamore, Ill.

Filed Dec. 12, 1968, Ser. No. 783,388
Int. Cl. B65h *75/36*
U.S. Cl. 242—85.1 **5 Claims**



An electrician's fish tape reel which is adjustable to accommodate fish tapes of various widths. The spacing between the outer peripheral lips of the reel sections may be varied for tapes of varying widths. This is accomplished by changing the alignment of the reel sections relative to each other to position projections on the inner peripheral walls of the reel sections in or out of contact with one another.

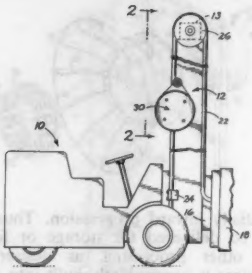
3,601,331

APPARATUS INCLUDING MIDLINE TAKEUP DEVICE

Max Frey, Portland, and Donald M. Faust, Estacada, both of, Oreg., assignors to Cascade Corporation, Portland, Oreg.

Filed June 13, 1969, Ser. No. 833,117
Int. Cl. B65h *75/48*
U.S. Cl. 242—107.11 **7 Claims**

Apparatus including multiple lines extending between spaced locations where a midline takeup device is supported on said lines between said locations constructed to pay out and take in such lines to accommodate slackening and tensioning effects in such lines between said two locations. The device includes a collector holding stored portions of the lines, and is constructed so that parallel reaches of the lines extend out in opposite directions from the collector. The collector may comprise axially spaced mating reel sections, with one holding stored portions of one line and the other holding stored portions of the other line, and a helical spring located between and housed within the reel sections urging rotation of the collector in a direction producing simultaneous takeup of both lines.

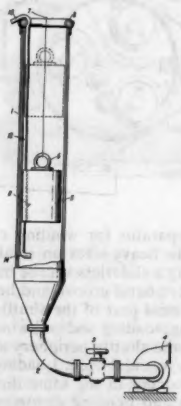


3,601,332

DEVICE FOR ELIMINATING YARN SLACK IN KNITTING MACHINES

Alois Kubelka, and Frantisek Svoboda, both of Brno, Czechoslovakia, assignors to Vyzkumny ustav pletarsky, Brno, Czechoslovakia

Filed June 25, 1969, Ser. No. 836,392
Claims priority, application Czechoslovakia, June 27, 1968, 4723-68
Int. Cl. B65h *59/00*
U.S. Cl. 242—147 A **9 Claims**

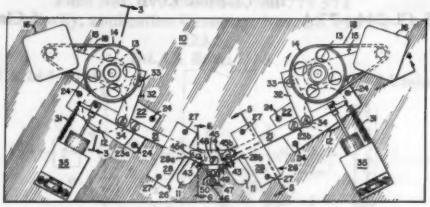


A device to be used in knitting machines for eliminating slack in yarn. The yarn travels from a suitable source of supply to a part of the machine where the yarn is acted upon. In the path of travel of the yarn is located a hollow cylinder having opposed open ends, and the yarn extends into the cylinder at one of the open ends thereof. A piston is freely movable within the cylinder and carries an eye through which the yarn passes before travelling out of the cylinder through the same end at which the yarn enters the cylinder. An evacuating structure communicates with the interior of the cylinder at the side of the piston which is directed away from the yarn guiding eye, so as to create in this part of the cylinder a lesser pressure tending to draw the piston further into the cylinder so as to eliminate any slack in the yarn.

3,601,333
TAPE-REELING SYSTEM HAVING TAPE TENSION CONTROL

Edwin O. Du Buis, Pearl River, N.Y., and Carl Bayer, Jr., Park Ridge, N.J., assignors to Mohawk Data Sciences Corporation, Herkimer, N.Y.

Filed Feb. 19, 1969, Ser. No. 802,754
Int. Cl. B65h *59/38*; G03b *1/04*; G11b *15/38*
U.S. Cl. 242—189 15 Claims

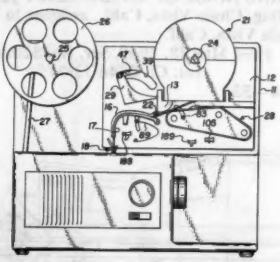


A tape-reeling system having a tension-control arm which is pivotable in response to a change in tension in the tape, and a motor for applying a takeup torque to the reel through a continually driven roller in frictional contact with a drum mounted on the reel's shaft. Movement of the tension-control arm moves a link which effects a movement of the roller. The frictional force between the roller and drum is thus changed and the takeup torque applied to the reel controlled. In a system having two tension-control arms associated with takeup and payout reels, rapid winding is achieved by locking one of the tension-control arms in a position to provide non-slipping contact between a drum and roller, while stopping the other arm from moving to such a position.

3,601,334
REVIEW MECHANISM FOR SELF-THREADING MOTION PICTURE PROJECTORS

Daniel J. Stark, and Leslie J. Bunting, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 15, 1969, Ser. No. 824,759
Int. Cl. G11b *15/32*, *15/66*
U.S. Cl. 242—192 6 Claims

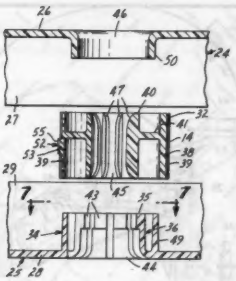


In a motion picture projector of the type provided with film-threading members operable by a rotatable cam member, a review mechanism includes means for disabling movement of the threading members so that rotation of the cam member can be employed to recock a spring-actuated film rewinding mechanism after the film has been only partially rewound, thereby allowing repetition of a selected scene sequence.

3,601,335
FILM CARTRIDGE

Charles W. Dopkins, Cottage Grove, and Richard Alan DeVries, New Brighton, both of, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 2, 1970. Ser. No. 7,530
Int. Cl. G03b *1/04*; G11b *15/32*, *23/04*
U.S. Cl. 242—199 9 Claims

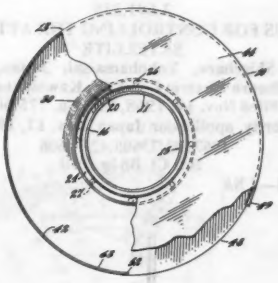


A film cartridge in which the rotation of spools on which supply and takeup rolls of film in the cartridge are wound is restrained to cause controlled, uniform advancement of the film and to maintain compact supply and takeup rolls. In one embodiment, a central spindle of the spools is rotatably mounted within a hub that comprises spring fingers arranged as a segmented cylindrical bearing. The spindle is larger in diameter than the bore through the segmented cylindrical bearing, so that the spindle slightly displaces the spring fingers from their normal position. As a result, the spring fingers exert a pressure on the spindle that restrains rotation of the spool. In a preferred embodiment, supply and takeup rolls of film are reliably attached to the spools by placing an aperture in the ends of the film over a tab on the spools' film-winding surface that has a dimension in the film-winding plane that is larger than the aperture.

3,601,336
MAGNETIC COMPUTER TAPE REEL

Larry T. Preston, 4023 Haverford Ave., Philadelphia, Pa.

Filed Jan. 21, 1969, Ser. No. 792,297
Int. Cl. G11b *23/10*
U.S. Cl. 242—197 6 Claims

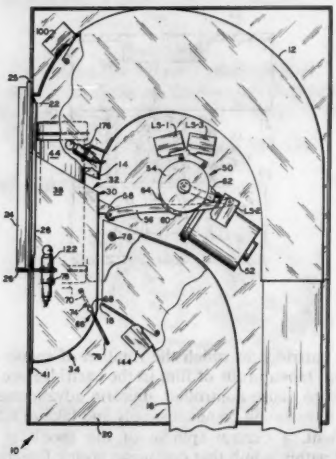


This magnetic tape reel has a hub portion which turns with the drive on which it is mounted, bearings including a rolling surface contact which are on the hub portion, and an outside portion on the bearings. The outside portion has identificatory matter on its outer edge and in part of its outer edge there is an opening through which the magnetic tape can go, and the outside portion will remain stationary while the hub portion is turning during the rolling and unrolling of the tape.

3,601,337
TERMINAL STATION FOR PNEUMATIC CARRIER SYSTEM

K. G. Bullock, Grand Rapids, Mich., and Alfred G. Hawkins, Swanton, Ohio, assignors to Meilink Steel Safe Company, Toledo, Ohio

Filed Aug. 8, 1969, Ser. No. 848,654
Int. Cl. B65g *51/32, 51/34*
U.S. Cl. 243—24 14 Claims

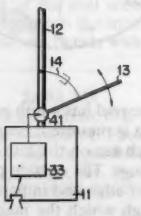


A terminal station for receiving, holding or removal of, and dispatching pneumatically propelled carriers having a motor-operated, three-position, pivoted door equipped with a carrier receiver which receiver retains the carrier when the door is in a closed position and one of two open positions. The carrier-retaining means is stationary when the door is in its closed position for receiving the carrier and may be stationary or movably mounted on the door when the door is in its first open position for holding or retaining the carrier in the receiver. This retaining means is automatically removed when the door is moved to its other or further open position for permitting a carrier to be dispatched by passing through the receiver on the door. This movement of the door into its further open position is controlled automatically by sensing means when the carrier is removed from the receiver in the door's first open position, or this further movement of the door may be controlled manually from a remote station as can all other of its movements.

3,601,338
APPARATUS FOR CONTROLLING THE ATTITUDE OF A SATELLITE

Masamichi Shigehara, Yokohama-shi, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Nov. 14, 1968, Ser. No. 775,605
Claims priority, application Japan, Nov. 17, 1967, Nov. 17, 1967, 42/73605;42/73606
Int. Cl. B64g *1/00*
U.S. Cl. 244—1 SA 4 Claims

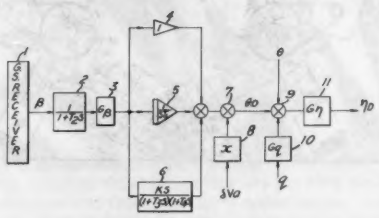


An attitude-control apparatus for a satellite includes a main rod extending from the satellite body and having a weight at the outermost end thereof, and a rotatable damping rod supported on the satellite body. Damping control is effected by detecting the deflection of the satellite body from the standard direction in an inertial space thereby to vibrate the damping rod in the direction opposite to that of the deflection.

3,601,339
AIRCRAFT-LANDING SYSTEMS

Ian A. Watson, Lewisham, London, England, assignor to Elliott Brothers (London) Limited, London, England

Filed June 3, 1968, Ser. No. 734,056
Int. Cl. B64c *13/18*
U.S. Cl. 244—77 A 6 Claims



The present invention resides in a system employing a modified glide slope control law to give a more precise control over the glide slope made in landing and also over the flare or flareout thereof. The modified law which defines a pitch attitude demand signal (θ_D) reads:

$$\theta_D = G_\beta\left[1+\frac{1}{ST_1}+\frac{Ks}{(1+T_3s)(1+T_4s)}\right]\frac{\beta}{(1+T_2s)}$$

in which:

θ_D = pitch attitude demanded by the control law;

G = glide slope gearing ratio viz: the number of degrees of pitch attitude demanded per degree of deviation from the glide slope;

β = glide slope deviation;

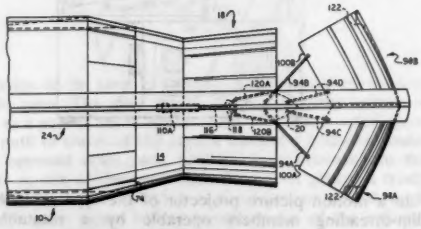
T_2 = the lag time constant afforded by the provision of smoothing capacitors on the glide slope receiver output; and

K, T_3 and T_4 are constants for the aircraft in which the system is installed.

3,601,340
METHOD AND APPARATUS FOR AUGMENTING AND REVERSING THRUST AND REDUCING NOZZLE BASE DRAG AND NOISE OF AN AIRCRAFT JET ENGINE

Jack H. Hilbig, Chula Vista, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

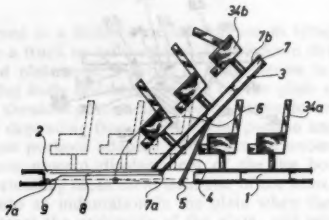
Filed May 28, 1969, Ser. No. 828,694
Int. Cl. B64d *33/04*
U.S. Cl. 244—53 6 Claims



In a retracted position a pair of deflectors are disposed in spaced relation adjacent the periphery of the aft end of an aircraft housing, so that air flowing past the housing is deflected toward and around the exhaust gas discharged from a jet engine in the housing. A tubular ejector is movable from a position around the housing to a downstream position

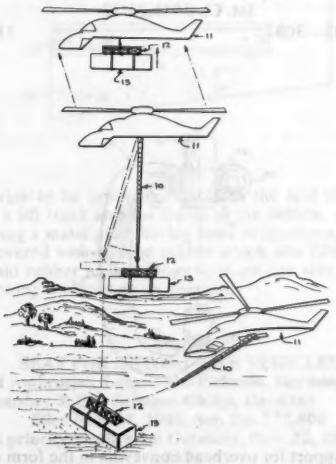
wherein said exhaust gas flows through the housing. When the ejector is deployed downstream the deflectors are moved to a partially deployed position wherein they intercept a larger volume of air flowing past the housing and deflect the same into the ejector. In a fully deployed position the deflectors are disposed downstream from the housing and deflect exhaust gas in the forward direction, the ejector being at this time retracted to its position around the housing.

3,601,341
COMPARTMENTAL FUSELAGE
Heinrich Hertel, Tannenbergallee 36, Berlin, Germany
Filed Nov. 27, 1968, Ser. No. 779,574
Claims priority, application Germany, Nov. 29, 1967, P 15 31 423.5
Int. Cl. B64c *1/18*
U.S. Cl. 244—119 **8 Claims**



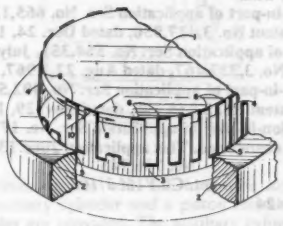
The outer shell of a fuselage is divided by a floor wall into an upper pressurized passenger compartment and a lower compartment in which jet engines and other machinery are located. A service opening is provided in the floor wall and is normally closed by closure means to which seats are secured. When the closure means is open, access from the passenger compartment to the machinery in the lower compartment is possible through the service opening.

3,601,342
CARGO HOIST SYSTEM FOR HELICOPTERS
Frank N. Piasecki, Haverford, Pa., assignor to Piasecki Aircraft Corporation, Philadelphia, Pa.
Filed June 20, 1969, Ser. No. 835,049
Int. Cl. B64d *9/00*
U.S. Cl. 244—137 **35 Claims**



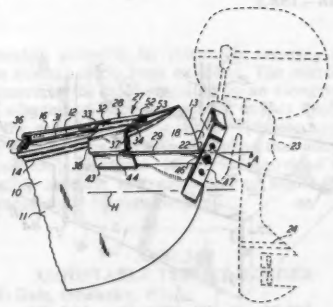
A cargo hoist system for a helicopter including a boom extensible along its length, operatively connected at one end thereof to the helicopter, carrier means detachably connectable to a cargo unit to be hoisted, means disposed on the free end of the boom detachably connectable to the carrier means, and means for retracting the extensible boom.

3,601,343
STRAIN-FREE MOUNT
Armen H. Sivasilian, Newport Beach, Calif., assignor to North American Rockwell Corporation
Filed Sept. 5, 1969, Ser. No. 855,500
Int. Cl. F16f *15/06*; F16m *13/00*
U.S. Cl. 248—2 **1 Claim**



A strain-free mount, for supporting an object, such as synchrostator or an optical element, relative to a base such as to allow only radial (volumetric) relative expansion or contraction and to prevent rotation or overall translation of the supported object relative to the base. This mount provides a circumferentially arranged set of thin, wide, beamlike support elements, fixedly attached to both the supported object and the base to accommodate differential radial expansion or contraction of the supported object by bending of the beams in their thin dimension, while rotation or overall translation of the supported object is resisted by the shear stiffness of the beams in their thick dimension. By suitably proportioning the beam dimensions the mount can be made to have negligible resistance to purely radial expansion or contraction of the supported object and very high resistance to rotation or overall translation. The invention herein described was made in the course of or under a contract or subcontract thereunder, with the Air Force.

3,601,344
CANOE MOTOR MOUNT
Jack T. Nourse, Kenosha, Wis., assignor to NO-Mad Marine, Inc., Racine, Wis.
Filed Apr. 18, 1969, Ser. No. 817,404
Int. Cl. B63h *21/26*
U.S. Cl. 248—4 **7 Claims**



A canoe motor mount having a motor mount member positionable at the stern of the canoe and being held there by attachment means connected to the canoe. The motor mount member includes a V-shaped notch for resting the member

downwardly onto the keel at the canoe stern. The attachment means includes a wedge-shaped portion which can be snugly disposed at the upper edges of the canoe sides and is for various sizes of canoes. Adjustable connectors are included in the attachment means and extend to the motor mount member so that the motor mount member and the wedge-shaped portion can both be in snug contact with the canoe. This renders the entire structure adaptable to canoes of different sizes.

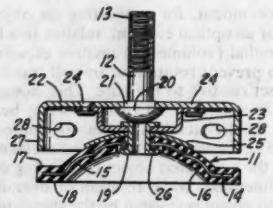
3,601,345
ADJUSTABLE VIBRATION ISOLATER

Kenneth W. Johnson, 4113 Lakeshore Drive, Rte 1, Jamestown, Ohio

Continuation-in-part of application Ser. No. 665,133, July 21, 1967, now Patent No. 3,417,950, dated Dec. 24, 1968, which is a division of application Ser. No. 564,351, July 11, 1966, now Patent No. 3,337,167, dated Aug. 22, 1967, which is a continuation-in-part of application Ser. No. 402,587, Oct. 8, 1964, now Patent No. 3,288,405, dated Nov. 29, 1966, which is a continuation-in-part of application Ser. No. 177,037, Mar. 2, 1962, now abandoned. This application June 13, 1968, Ser. No. 736,745

Int. Cl. F16f *3/10*

U.S. Cl. 248—24 **3 Claims**



A vibration isolating and friction gripping device having resilient spring elements in frictional interengagement during operating conditions including means for changing the spring rate either through the use of resilient elements of differing spring rates or the use of concave washers of differing sizes. The device also includes a movable dial to provide leveling adjustability of an object mounted on the device without requiring lifting of the object by other means.

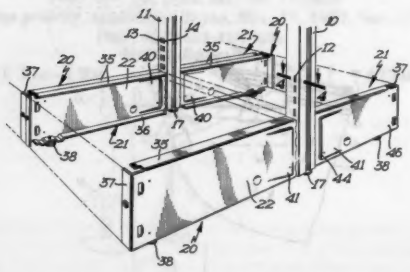
3,601,346
DISPLAY FIXTURE FRAME

Jay G. Fenwick; Earl Christensen, and Carl A. Wettlaufer, all of Albert Lea, Minn., assignors to Streater Industries, Inc., Albert Lea, Minn.

Filed May 15, 1969, Ser. No. 824,998

Int. Cl. F16m *11/20*

U.S. Cl. 248—188.8 **2 Claims**



The invention relates to a frame for a display fixture or the like. Frames of this type have vertical posts or standards and extending laterally from each standard and connected thereto with hooks are a pair of structural members known as base arms. The hooks are subjected to relatively heavy compressive and tensile forces due to loads applied to the base arms. The base arms are dished on their inboard ends to effectively redirect the forces applied to the hooks to minimize or reduce the effect of the loading on the hooks.

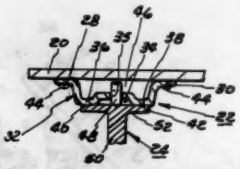
3,601,347
PERFORATED STRUT MEMBER

James W. Attwood, and Henry A. Podedworny, both of Wayne, Mich., assignors to Unistrut Corporation, Wayne, Mich.

Filed Sept. 30, 1969, Ser. No. 862,220

Int. Cl. A47j *5/00*

U.S. Cl. 248—242 **10 Claims**



A strut member for attachment to a surface or between surfaces and which has at least one longitudinally depressed mounting surface, with perforations within the recess at a plurality of spaced locations for attachment of fasteners, brackets or other support members. The strut member may be constructed of a variety of cross sections or shapes from a simple L-section to U-channels and polygonal shapes. The internal ridges on either side of the depression form flanges for the attachment of connecting elements and the like. In one form, the perforations are provided with knockouts which, when in place, substantially retain the original strength of the strut member.

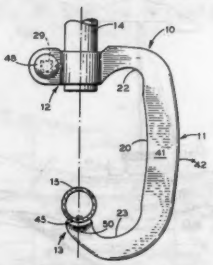
3,601,348
RAIL SUPPORT FOR OVERHEAD CONVEYORS

George E. Gonsalves, and Felice Dosso, both of 623 Bergen Street, Brooklyn, N.Y.

Filed Sept. 17, 1969, Ser. No. 858,836

Int. Cl. E01b *25/22*

U.S. Cl. 248—300 **11 Claims**

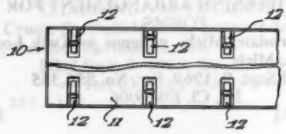


A rail support for overhead conveyors in the form of a one piece metal stamping derived from a flat metal blank having an edge configuration which allows the blank to be progressively bent to provide a bifurcated clamping portion and a rail seat portion.

3,601,349
TIEDOWN LUG

James E. Murphy, Jr., Flossmoor, Ill., assignor to Thrall Car Manufacturing Company, Chicago Heights, Ill.

Filed June 12, 1969, Ser. No. 832,644
Int. Cl. B65j 1/22
U.S. Cl. 248—361 6 Claims

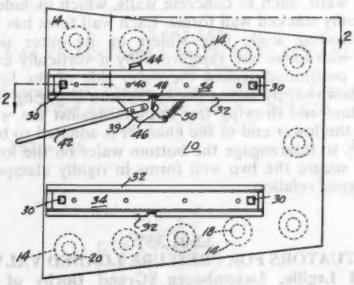


Disclosed is a tiedown device for use in tying a load in place on a truck or railroad car. The tiedown device has an elongated plate with a series of indentations in each side edge, a lug body slidably mounted on the plate topside and having a shoulder portion and a pair of arms downwardly and inwardly depending from the shoulder portion and terminating in nose portions adapted to contact the underside of the plate upon upward displacement of the lug body, an upwardly extending tooth on at least one of the arms adapted to extend into an indentation in the plate when the nose portions contact the underside of the plate, and means on the lug body for attaching a tiedown strap or line.

3,601,350
RESILIENT MOUNTING FOR VEHICLE SEATS

Elwood Fry, 1818 Pennsylvania Ave. W., Warren, Pa.

Filed Aug. 8, 1969, Ser. No. 848,631
Int. Cl. F16m 1/00
U.S. Cl. 248—399 4 Claims



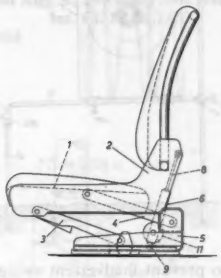
A device to be interposed between the seat of a vehicle such as a lift truck and the frame of the vehicle, said device comprising a metal plate having rows of apertures, said plate being covered with molded rubber which also fills said apertures, said rubber having projections on one side, each projection being centered on an aperture.

3,601,351
SEAT FOR AUTOMOTIVE VEHICLES

Manfred Ambrosius, Langenfeld-Richrath, Germany, assignor to Bremshey & Co., Solingen-Ohligs, Germany

Filed Nov. 21, 1968, Ser. No. 777,800
Claims priority, application Germany, Nov. 22, 1967, B 73 567
Int. Cl. A47c 3/30
U.S. Cl. 248—400 1 Claim

A seat for an automotive vehicle having a supporting surface suspended on swingable members and adjustable in vertical direction, which comprises means for displacing the bearing surface hydropneumatically in a shock-absorbing manner, and a single-acting hydraulic cylinder is arranged which defines a pressure chamber and which supports the seat. A hydraulic accumulator is also arranged which includes a reduced passage cross section. The hydraulic

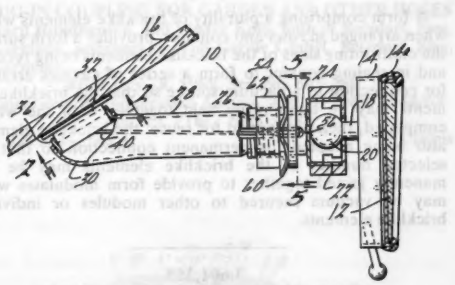


cylinder communicates with the hydraulic accumulator. A pressure auxiliary cylinder and a piston movable in the auxiliary cylinder are provided. The auxiliary cylinder is variable as to its volume by the piston, the latter mechanically and forcibly adjusting its position in the auxiliary cylinder. The pressure chamber is also in communication with the auxiliary cylinder.

3,601,352
BREAKAWAY REARVIEW MIRROR MOUNTING ASSEMBLY

Peter L. Jensen, Livonia, and Richard H. Miller, Wayne, both of, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 13, 1969, Ser. No. 790,642
Int. Cl. B60r 1/04
U.S. Cl. 248—481 13 Claims



A mounting assembly for releasably securing a rearview mirror to motor vehicle body structure. The mirror is operatively secured to the body structure by an elongate frangible member adapted to fracture upon an impact load being applied to the mirror. Also, the mirror is interconnected with the body structure by a friction coupling that allows manual mirror position adjustment. Means are provided to preload the frangible member in tension and to adjust the friction force present at the friction coupling.

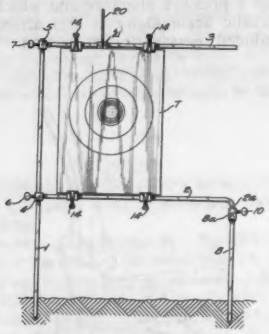
3,601,353
ADJUSTABLE TARGET HOLDER

Vernon F. Dale, Onalaska, Wis.

Filed Mar. 27, 1970, Ser. No. 23,293
Int. Cl. A63b 69/00; A45j 3/44
U.S. Cl. 248—470 5 Claims

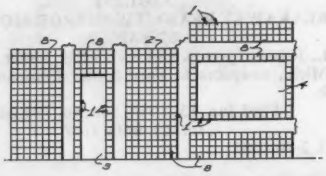
An adjustable holder for replaceable targets and which is adapted to be set into the ground or alternately, hung from an overhead support. The holder has an extension for its

main leg and by means of which targets of varying heights can be accommodated. A secondary leg is spaced from the



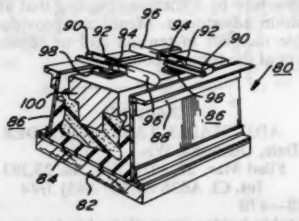
main leg so as to prevent inadvertent swinging of the target and a pair of vertically spaced rods are provided and have clamp means which accommodate targets of various widths.

3,601,354
VACUUM UNITED FORM STRUCTURE
Robert W. Rogers, 562 E. Hyde Park Blvd., Inglewood, Calif.
Filed Oct. 30, 1969, Ser. No. 872,484
Int. Cl. E04g *11/08*
U.S. Cl. 249—27 **19 Claims**



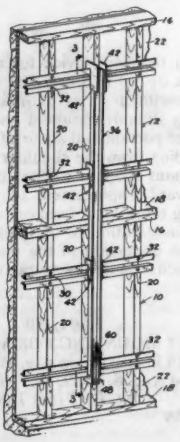
A form comprising a plurality of bricklike elements which, when arranged in rows and columns, provides a form surface; the confronting sides of the bricklike elements being recessed and in sealing contact to form a series of cavities arranged for connection to a vacuum source so that the bricklike elements may be temporarily held together until the wall is completed, then dismantled for reuse; the bricklike elements also being adapted for permanent connection so that any selected number of the bricklike elements may be permanently joined together to provide form modulates which may be vacuum secured to other modules or individual bricklike elements.

3,601,355
APPARATUS FOR MOLDING ARTICLES
Paul H. Fleck, Melrose Park, Pa., assignor to Urethane Fabricators, Inc., Camden, N.J.
Division of Ser. No. 760,414, Sept. 18, 1968
Filed Mar. 17, 1969, Ser. No. 807,620
Int. Cl. B22d *5/00*
U.S. Cl. 249—91 **9 Claims**



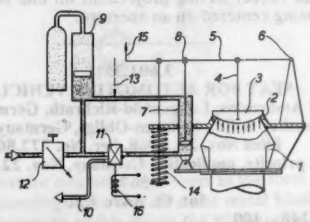
Apparatus for molding articles having a base, a pair of side plates hinged thereto for movement to and from a lowered position and a raised position in opposed relation, said base and side plates forming a mold cavity when said side plates are raised, and means for retaining said side plates in raised position to provide said cavity. In one form, an end plate may also be provided hinged to said base for movement to and from a lowered and a raised position. When said side and end plates are in raised position, they may be interlocked in the latter position to maintain said cavity.

3,601,356
VERTICAL STIFFENING ARRANGEMENT FOR WALL FORMS
Emil Yurick, Ferndale, Mich., assignor to Kwik Lock Form Co., Northville, Mich.
Filed Sept. 9, 1969, Ser. No. 856,355
Int. Cl. E04 *9/06*
U.S. Cl. 249—192 **8 Claims**



A wall form arrangement of the type used in forming composition walls, such as concrete walls, which includes a pair of vertically stacked wall forms. Each wall form has horizontally extending angle iron walers on its outer side. The stacked wall forms are reinforced by a vertically extending channel positioned against the outer side of the forms and having downwardly facing hooks thereon engaging the angle iron walers and drawing the channel against the walers. A hook at the lower end of the channel is adapted to be drawn upwardly to interengage the bottom waler on the lower wall form to secure the two wall forms in rigidly clamped vertically aligned relation.

3,601,357
ACTUATORS FOR PRESSURE LOADED VALVES
Edouard Legille, Luxembourg (Grand Duchy of Luxembourg), assignor to S. A. Des Anciens Etablissements Paul Wurth, Luxembourg, Luxembourg
Filed Aug. 18, 1969, Ser. No. 850,914
Claims priority, application Luxembourg, Aug. 19, 1968, 56,736
Int. Cl. F16k *31/163*
U.S. Cl. 251—25 **2 Claims**



Hydromechanical control devices for valves which are normally held in the closed position against applied fluid pres-

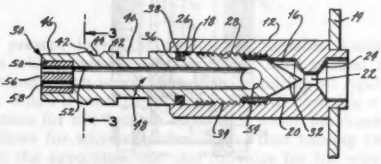
sure are disclosed. The control devices include a differential area piston mechanically linked to the valve and acted upon by fluid furnished from an accumulator system. The force resulting from the application of system pressure to the small area end of the piston counterbalances the normal applied pressure thereby holding the valve closed and valve opening is achieved by placing the large area end of the piston in communication with the accumulator system.

3,601,358

CHARGING VALVE CONNECTOR

Lee H. Cruse, Springfield, Mo., assignor to Foster Manufacturing Co. Inc., Springfield, Mo.

Filed Sept. 2, 1969, Ser. No. 854,655
Int. Cl. F16k 5/02, 31/44
U.S. Cl. 251—144 3 Claims



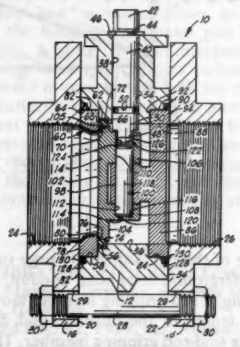
A charging valve connector is comprised of a cylindrical receptacle body mounted in the wall of a tank and providing communication between the interior and exterior of the tank. A movable valve element is threaded within the receptacle body and is rotatable for causing its movement from an open position, wherein it is spaced from a valve opening in the receptacle body, to a closed position wherein it closes the valve opening to prevent flow of fluid between the interior and exterior of the tank. A bore extends through the valve element and provides communication from the exterior of the tank to the valve opening when the valve element is in its open position, thereby providing a line of communication from the exterior of the tank to its interior through the valve opening.

3,601,359

DISC VALVE ASSEMBLY WITH REPLACEABLE DISC AND SEATS

Domer Scaramucci, 3245 S. Hattie, Oklahoma City, Okla.

Filed Aug. 5, 1969, Ser. No. 847,628
Int. Cl. F16k 1/22
U.S. Cl. 251—148 18 Claims



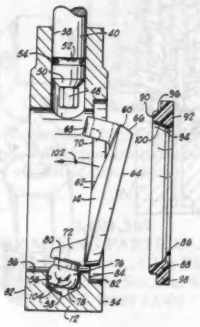
A disc valve assembly, particularly useful between flanges, which has a removable and replaceable disc valve member and removable and replaceable seat. The disc valve member is journally supported in the valve body such that the thrust created by a pressure differential across the disc valve member is carried by the valve body, and yet the rotational interconnecting elements of the disc valve member are also replaceable.

3,601,360

DISC VALVE ASSEMBLY WITH TILT IN VALVE MEMBER

Domer Scaramucci, 3245 S. Hattie, Oklahoma City, Okla.

Filed Aug. 6, 1969, Ser. No. 848,414
Int. Cl. F16k 1/20
U.S. Cl. 251—304 15 Claims



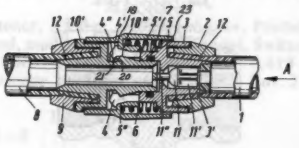
A disc valve assembly having valve stems adapted to cooperate with the disc valve member and the valve body, such that the disc valve member is installed by being tilted and inserted axially into the valve body, and wherein the seat is also inserted axially in the valve body.

3,601,361

PLUG-IN COUPLING FOR GARDEN AND OTHER HOSES

Eckard Hundhausen, and Walter Kolb, both of Betzdorf, Sieg, Germany, assignors to Wolf-Gerate GmbH, Betzdorf, Sieg, Germany

Filed July 28, 1969, Ser. No. 845,280
Claims priority, application Austria, Aug. 9, 1968, 7844/68
Int. Cl. F16l 37/28, 37/26
U.S. Cl. 251—149.1 7 Claims

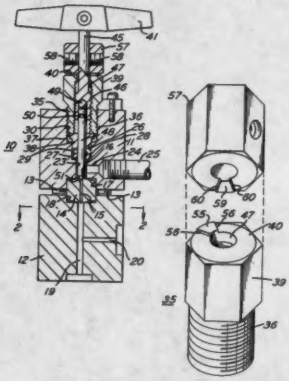


A hose coupling with male and female parts; the male part having a double conical bead for being engaged by fingers on the female part; the fingers have notches formed of cooperatingly sloped surfaces which receive the bead; the external surfaces of the fingers are obliquely sloped; a sleeve surrounds the female part; it has a cooperatingly sloped surface engaging the outer surface of the fingers; as the hose coupling parts are pressed together, the male part forces the fingers outward and the cooperating outer surfaces of the fingers and the sleeve surfaces cause the sleeve to shift along the female part and permit the fingers to move outward to receive the male part, which snaps into the notches in the fingers.

3,601,362
STOP FOR VALVE SHANK

Rush B. Gunther, Abington, Pa., assignor to The Duriron Company, Inc., Hatboro, Pa.

Filed Sept. 10, 1969, Ser. No. 857,639
Int. Cl. F16k *51/00, 31/50*
U.S. Cl. 251—285 5 Claims

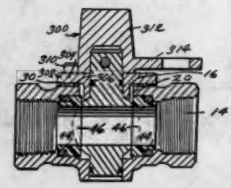


A stop for valve shanks for high pressure valves is provided which includes a stop element adjustably mounted on the valve shank and having a land for engagement with a shoulder on the valve gland or housing to prevent further turning for valve seating.

3,601,363
BALL VALVES

Frank H. Mueller; Wilbur R. Leopold, Jr., and John J. Smith, all of Decatur, Ill., assignors to Mueller Co., Decatur, Ill.

Division of Ser. No. 794,822, Nov. 29, 1968, which is a Division of Ser. No. 417,435, Dec. 10, 1964, Pat. No. 3,437,106
Filed Aug. 5, 1969, Ser. No. 871,363
Int. Cl. F16k *51/00, 5/20*
U.S. Cl. 251—288 1 Claim

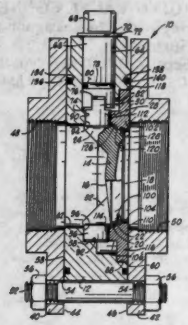


A ball valve is provided with resilient annular seats between the ball and housing through passageway. The housing is provided with opposed lateral openings, through one of which a key including a valve ball is received. One trunnion of the key protrudes into the other opening and is sealed with respect thereto by an O-ring received in an annular groove in that trunnion. The housing is flat surrounding where the valve key is inserted in the housing. An L-shaped spacer bears against the ball and is mounted upon the flat surface via screws, two separated ones of which function as stops for rotation of the valve key. A resilient gasket is interposed between the L-shaped spacer and the flat surface.

3,601,364
DISC VALVE ASSEMBLY WITH INSERTABLE VALVE MEMBER AND SEATS

Domer Scaramucci, 3245 S. Hattie, Oklahoma City, Okla.

Filed Aug. 5, 1969, Ser. No. 847,564
Int. Cl. F16k *1/22*
U.S. Cl. 251—306 5 Claims

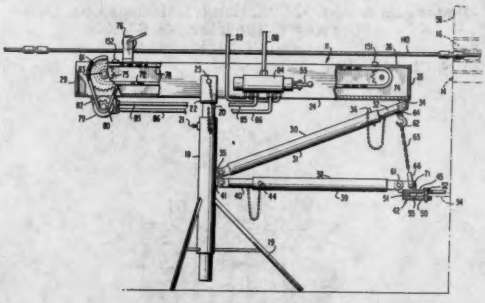


A disc valve assembly wherein the seats and the disc valve member, having the valve stems connected thereto, are axially insertable in the valve body.

3,601,365
DUCT RODDER

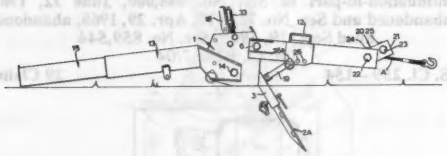
Henry M. Hall, P.O. Box 9603, Atlanta, Ga.

Filed Apr. 15, 1969, Ser. No. 816,296
Int. Cl. E21c *29/16*
U.S. Cl. 254—134.3FT 7 Claims



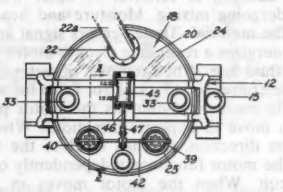
A duct rodder of the type utilized to urge rods through the ducts of an underground telephone conduit, comprising an elongated housing, a rod gripping member movable back and forth along the length of the housing, and drive means for positively driving said rod gripping member. The rod gripping member comprises a U-shaped bracket for receiving a rod, and a pivotal wedge member is supported by the legs of the bracket above the position normally occupied by the rod, and is movable into frictional engagement with the rod in such a manner that when the rod gripping member is moved in one direction the rod gripping member carries the rod with it, and when the rod gripping member is moved in the opposite direction, it moves over the surface of the rod.

3,601,366
HAULING APPARATUS
George S. Webster, Rhyl, North Wales, assignor to Samuel Lewis (Winches) Limited, Netherton, Dudly, England
Filed July 17, 1969, Ser. No. 842,646
Claims priority, application Great Britain, July 17, 1968, 33932/68
Int. Cl. E21c *29/16*
U.S. Cl. 254—147 5 Claims



The present invention discloses a foldable hauling apparatus which can be used on either hard ground or soft ground and which is self-anchoring, requiring no rigid structure to which it must be attached. Also disclosed is a winch mechanism for this hauling apparatus, which mechanism not only allows for wire to be hauled in, thus hauling the load towards the apparatus, but also provides for the wire to be paid out under tension; the speed at which the wire is paid out being dependent on the speed at which an operator operates the mechanism.

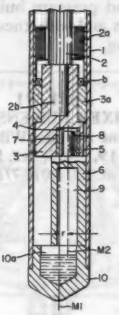
3,601,367
MIXING GLASS BATCH MATERIALS
Chester J. Brown, Jr., Toledo, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio
Filed Sept. 19, 1969, Ser. No. 859,304
Int. Cl. B01f *9/10, 15/00*
U.S. Cl. 259—1 R 6 Claims



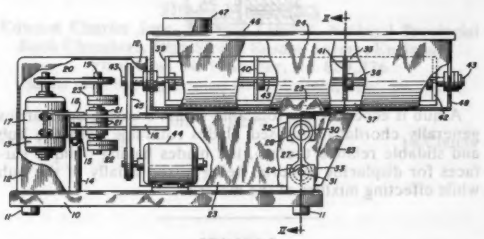
The invention pertains to a method of and apparatus for minimizing dust and moisture losses to dust collection systems from the hood of horizontal pan type glass batch mixing apparatus. A butterfly valve interposed in the exhaust port between the hood and the dust collector is selectively opened and closed in conjunction with the mixing cycle. The wafer of the butterfly valve contains a plurality of openings having sufficient area to prevent pressure buildup within the mixing chamber due to the heating and consequent expansion of the air therein, but effectively closing off the exhaust port between the mixing chamber and the dust collection system during both the dry and wet mixing stages.

3,601,368
INTERIOR VIBRATOR WITH ROTATING UNBALANCE
Philipp Uebel, Munich, Germany, assignor to Wacker Werke KG, Munich, Germany
Filed Dec. 22, 1969, Ser. No. 887,119
Claims priority, application Germany, Dec. 21, 1968, P 18 16 421.1
Int. Cl. B01f *11/00*
U.S. Cl. 259—1 4 Claims

An inner vibrator with an unbalance body of cylindrical shape adapted to roll on the inner mantle of the housing for the vibrator, for compacting concrete and similar material, in which said unbalance body has one end provided with a short pivot which engages a bore of an eccentric disc drivingly connected with the motor shaft, the diameter of said bore being greater than the diameter of said pivot to such an extent that the unbalancing force produced by the rolling movement of the cylindrical unbalance body will not be transferred to the eccentric disc.

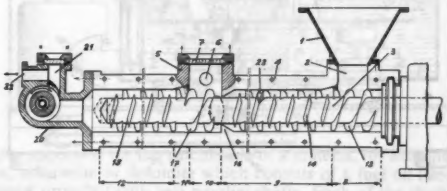


3,601,369
APPARATUS FOR MIXING PARTICULATE MATERIALS
Eugene A. Wahl, 294 Forest Ave., Glen Ridge, N.J.
Filed Apr. 1, 1969, Ser. No. 811,798
Int. Cl. B01f *11/00*
U.S. Cl. 259—2 5 Claims



Apparatus for receiving two or more streams of powdered or granular materials includes means to stir the received materials while such materials are vigorously vibrated and to discharge the mixed materials at a rate which is equal to the inlet rate.

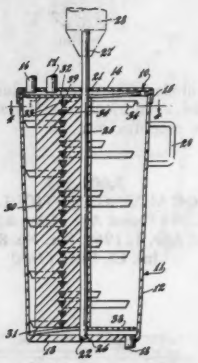
3,601,370
CONTINUOUSLY OPERATING MIXING AND KNEADING MACHINE
Erwin Ruettener, Riehen, and Fritz Sutter, Pratteln, both of, Switzerland, assignors to Buss AG., Basel, Switzerland
Filed Nov. 18, 1968, Ser. No. 776,418
Claims priority, application Switzerland, Nov. 20, 1967, 16,330/67
Int. Cl. B01f *7/02, 13/04*
U.S. Cl. 259—5 2 Claims



Continuously operating mixing and kneading machine embodying a continuous, rotating, reciprocating worm shaft mounted in a housing, which machine is divided into a feeder zone with continuous worm channels; an initial pressure buil-

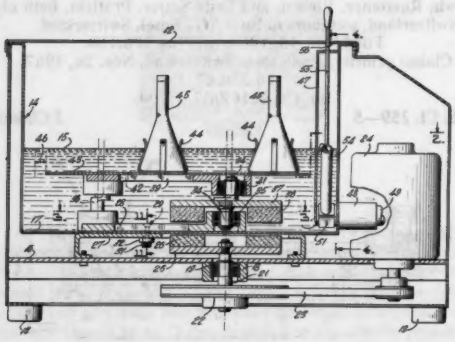
dup zone with discontinuous worm channels and with kneading dogs additionally mounted in the housing; a detensioning zone and a reintroduction zone, both with continuous worm channels; and a second pressure buildup zone with discontinuous worm channels and with kneading dogs mounted additionally in the housing.

3,601,371
MIXER DISPENSER
Abe D. Ross, 101 Marine Avenue, Wilmington, Calif.
Filed Nov. 19, 1968, Ser. No. 777,064
Int. Cl. B01f 7/16
U.S. Cl. 259—5 **8 Claims**



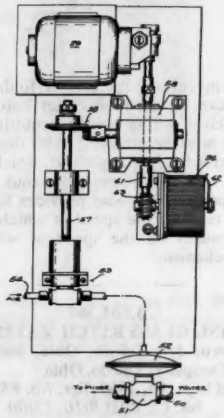
A hub is eccentrically rotatable within a casing and carries generally chordally disposed blades rotatable with the hub and slidable relative thereto, the blades having oblique surfaces for displacing material being mixed axially of the hub while effecting mixture of the material.

3,601,372
INCUBATOR SHAKER APPARATUS
Clyde S. Harmes, III, Schnecksville, Pa., assignor to New Brunswick Scientific Co., Inc., New Brunswick, N.J.
Filed May 20, 1969, Ser. No. 826,148
Int. Cl. B01f 9/00
U.S. Cl. 259—54 **7 Claims**



An incubator shaker apparatus in which objects are shaken by rotary or reciprocating action within a bath with the drive means being external of movable means within the bath and with the movable means being drivingly connected to the external drive means through magnetic elements to eliminate a physical driving connection between the movable means and the external drive means. The invention also provides for improved means for controlling the level of the bath.

3,601,373
MOISTURE CONTROLLER
Nelson Hartley, Towson, Md., assignor to Hartley Controls Corporation, Neenoh, Wis.
Continuation-in-part of Ser. No. 648,060, June 22, 1967, abandoned and Ser. No. 725,117, Apr. 29, 1968, abandoned
Filed Sept. 19, 1969, Ser. No. 859,544
Int. Cl. B28c 7/04
U.S. Cl. 259—154 **29 Claims**

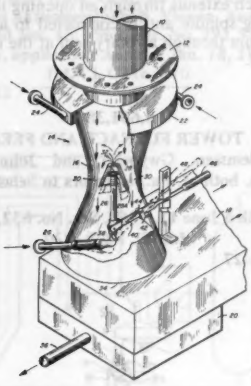


This disclosure relates to apparatus for electrically controlling the addition or removal of water with respect to material undergoing mixing. Moisture and heat sensors are exposed to the material. These sensors signal an electric circuit which energizes a reversible electric motor connected to a valve in a fluid line. When removal of water is desired, the motor can be connected to a control valve for a heater, such as a dryer. In some embodiments the motor periodically is energized to move in opposite directions. When the motor moves in one direction, it tends to close the valve. In this movement the motor functions independently of the electric sensing circuit. When the motor moves in the opposite direction, it tends to open the valve. In this movement the motor functions subject to the electric sensing circuit. The motor is also coupled to a balance element in the electric circuit to cause the motor and the relay which energizes it to hunt in a narrow range when the moisture requirement of the material is substantially satisfied. In other embodiments the motor does not hunt.

3,601,374
APPARATUS FOR EXTRACTING SOLIDS FROM A GAS STREAM
Roger M. Wheeler, 1957 E. 41st St., Tulsa, Okla.
Filed Aug. 5, 1968, Ser. No. 750,040
Int. Cl. B01d 47/10
U.S. Cl. 261—62 **8 Claims**

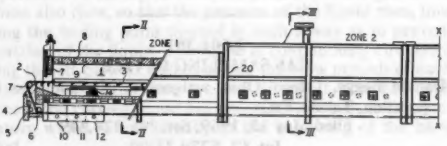
This invention relates to apparatus for extracting solids from a gas stream. More particularly, the invention relates to an apparatus for extracting solids from a gas stream including an upright scrubber column defining an internal circular gas flow chamber, inlet and outlet gas conduits connected to the upper and lower ends of the flow chamber respectively, a liquid inlet conduit intersecting the internal circular gas flow chamber tangentially providing means of introducing fluid to wet the surface of the flow chamber, a liquid conduit extending upwardly and coaxially within the flow chamber, and a truncated conical baffle supported at the top of the liquid spray conduit defining an annular passageway between the baffle and the gas chamber, fluid being sprayed upwardly through the baffle in a fountain configuration to engage the

downward flow of gas through the scrubbing column. One embodiment of the invention includes a means of varying the



elevation of the conical baffle by means exterior of the scrubbing column. Another embodiment of the invention includes means of varying the diameter of the conical baffle.

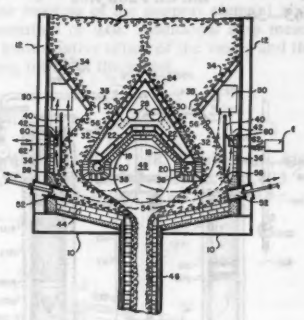
3,601,375
GLASS ANNEALING LEHRS
Edward W. Bowman, 279 Derrick Ave., Uniontown, Pa.
Filed Apr. 22, 1969, Ser. No. 818,225
Int. Cl. F27b *9/24*
U.S. Cl. 263—8 **5 Claims**



A glass annealing lehr constructed to direct the heating medium of different temperatures to separately controlled successive zones of the annealing tunnel through which the ware passes in traveling from the charge to the discharge end. The lehr also features the use of continuous conveying means on which the ware is supported to pass through the annealing tunnel in a single line whereby each unit of ware is subjected to uniform treatment in its passage through the lehr.

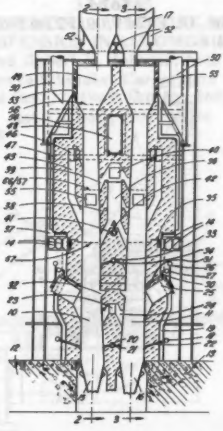
3,601,376
PROCESS AND APPARATUS FOR PREHEATING LIMESTONE AND THE LIKE
Gerhard Niemitz, Bronx, N.Y., assignor to Kennedy Van Saun Corporation, Danville, Pa.
Filed June 4, 1970, Ser. No. 43,406
Int. Cl. F27b *1/10*
U.S. Cl. 263—30 **10 Claims**

Apparatus for preheating limestone comprising an upright structure including a storage bin at the top, a horizontal bridge and arch structure extending through the central lower portion of the preheater, the upper walls of which slope outwardly, inwardly extending plates directing limestone from the side walls toward the bridge structure and covering a gas receiving space and gas outlets, duct means for introducing hot gases beneath the arch to pass through the stone moving downwardly over the bridge structure onto a sloping floor at each side, means for moving stone along each sloping floor into a discharge passage, a baffle wall extending along at each side of the bridge structure under the plates for dividing the gases leaving the preheating zone, and



valve control means in a gas passage outside the baffle wall for varying the flow of gases removed after passing through only a portion of the stone in preheating zone.

3,601,377
SHAFT FURNACES
Edward Charles Jope, Catagas Limited, National Provincial Bank Chambers, High Street, Epsom, Surrey, England
Filed Mar. 24, 1969, Ser. No. 809,876
Claims priority, application Great Britain, Mar. 29, 1968, 15271/68
Int. Cl. F27b *1/00*
U.S. Cl. 263—30 **10 Claims**

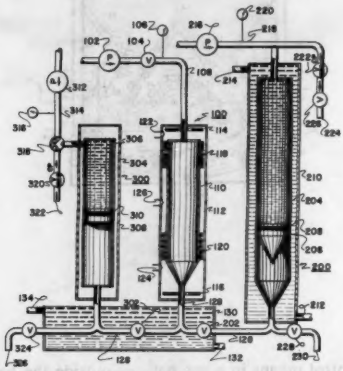


An apparatus for the calcination of a mineral, for example lime, magnesite or dolomite which consists of a fuel oil-fired furnace provided with two parallel shafts. Each of the shafts communicate with one or more gas bypass passages one of which is common to both shafts, which enables the downwardly moving charge to be isolated from the upwardly flowing furnace gases at a point in the furnace where a high degree of temperature uniformity is necessary in the charge.

3,601,378
CONTINUOUS HYDROTHERMAL APPARATUS AND PROCESS

Vernon J. Hurst, Athens, Ga., assignor to J. M. Huber Corporation, Locust, N.J.

Filed July 22, 1969, Ser. No. 843,535
Int. Cl. F26b *9/02*
U.S. Cl. 263—36 5 Claims

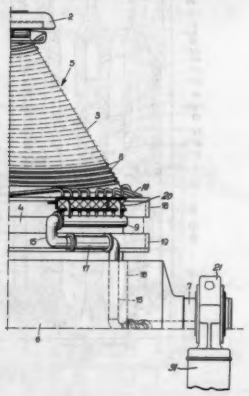


A continuous hydrothermal reactor for processing slurries at low velocity gradients capable of operating at up to approximately 1000° C. and up to approximately 30,000 pounds per square inch is disclosed.

3,601,379
COOLING STRUCTURE FOR A METALLURGICAL FURNACE

Karlheinz Langlitz, Mulheim (Ruhr); Wolfgang Jansa, Moers-Asberg, and Karl Heinrich Mahringer, Duisburg-Hamborn, all of, Germany, assignors to Demag Aktiengesellschaft, Duisburg, Germany

Filed Apr. 25, 1969, Ser. No. 819,322
Claims priority, application Germany, June 27, 1968, P 17 58 562.5
Int. Cl. F27d *9/00*; F23m *5/08*
U.S. Cl. 263—44 11 Claims

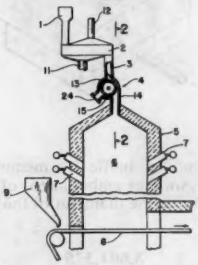


A metallurgical vessel includes a cylindrical portion which is supported on a ring carrying a tilting spindle which is mounted for pivotal tilting movement of the vessel. The vessel includes a frustoconical mouth portion at its upper end which terminates in a mouth ring of reinforced construction. The construction includes a cooling arrangement for the mouth portion which comprises a plurality of groups of coils which are wound around the mouth portion and which are advantageously wound in the form of a multistart screw thread. Each group of coils includes an inlet and an outlet which is connected to a distributor through suitable valves. This distributor in turn is connected through a main distribution pipe which extends through an opening in the tilting ring and the tilting spindle and is connected to a source of fluid cooling medium through a rotary seal at the outer end of the tilting spindle.

3,601,380
TOWER FURNACE AND FEED

Ernst A. Siemssen, Gwynedd, and John M. Hummel, Doylestown, both of, Pa., assignors to Selas Corporation of America

Filed June 11, 1969, Ser. No. 832,197
Int. Cl. F27b *1/20*
U.S. Cl. 266—27 5 Claims

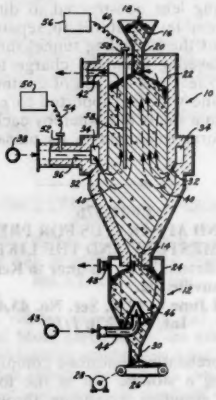


Means to supply clay particles to fall through a tower furnace comprising a rotating drum having particle-receiving indentations on its surface. As the drum is rotated, particles are picked up by it and dropped vertically in a substantially constant stream into and through the furnace.

3,601,381
GAS SAMPLING DEVICE

Donald Beggs, Toledo, Ohio, assignor to Midland-Ross Corporation, Toledo, Ohio

Filed May 15, 1969, Ser. No. 824,849
Int. Cl. F27d *23/00*
U.S. Cl. 266—29 3 Claims

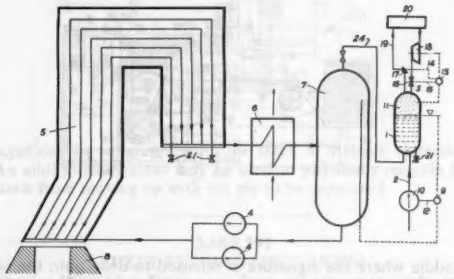


This disclosure is directed to a gas sampler useful in apparatus for the direct reduction of iron oxide to metallic iron such as a vertical shaft type furnace employing a gaseous reductant. A novel arrangement of gas sampling is employed which enables the degree of reduction being achieved to be determined and controlled, in situ, by gas analysis.

3,601,382
METHOD AND APPARATUS FOR AVOIDING OF EVAPORATION

Alfred Sandri, Graz; Anton Scherleitner, Graz; Stefan Ivessa, Leibnitz, and Karl Nutz, Graz, all of, Austria, assignors to Waagner-Biro Aktiengesellschaft, Vienna, Austria

Filed Jan. 15, 1969, Ser. No. 791,325
Claims priority, application Austria, Jan. 18, 1968, A500/68
Int. Cl. C21b 7/10
U.S. Cl. 266—32 11 Claims

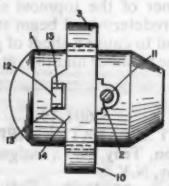


A method and apparatus for preventing the vaporization of a cooling liquid used in a boiler which is heated by waste gases from a converter. A circulating pump pumps a constant amount of cooling liquid through a system which includes in addition to the boiler and the pump a heat exchanger in which the liquid is cooled after leaving the boiler and a reservoir which receives the cooled liquid from the heat exchanger and which supplies the liquid to the circulating pump. A compensating or equalizing expansion tank communicates with the reservoir and maintains over a liquid which is in this latter tank a cushion of a noncorrosive gas. As the temperature of the liquid rises, the pressure of the gas in this cushion also rises, so that the pressure of the liquid rises, thus raising the boiling point thereof in such a way as to prevent vaporizing of the liquid. The liquid is continuously circulated during the off-blow as well as during the blow periods of each cycle, so that by the time the end of an off-blow has been reached, the cooling liquid has been cooled down to the temperature which it had initially at the beginning of the blow period.

3,601,383
SUPPORTING ARRANGEMENT FOR VESSELS USED IN METALLURGICAL PROCESSING INVOLVING HEAT

Karl-Heinz Mahringer, Duisburg-Hamborn, and Karlheinz Langlitz, Mulheim (Ruhr), both of, Germany, assignors to Demag Aktiengesellschaft, Duisburg, Germany

Filed Apr. 4, 1968, Ser. No. 718,744
Claims priority, application Germany, Sept. 22, 1967, D 54177
Int. Cl. C21c 5/50
U.S. Cl. 266—36 9 Claims

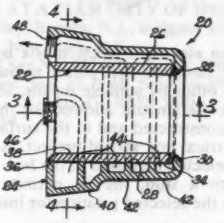


A supporting arrangement for vessels, such as steelmill converters, used in metallurgical processing involving heat, includes a supporting ring surrounding the vessel and supporting the vessel through the medium of support elements secured on the vessel wall and which extend radially from the vessel sidewall in angularly spaced relation therearound. A corresponding number of supports are provided on the supporting ring in only two opposed arcuate zones of the ring. Each support receives a respective support element and provides for movement of the associated support element both radially of the supporting ring and angularly relative to a radius of the ring or the axis of the vessel. The supports also accommodate twisting of the support element about its longitudinal centerline or axis. Additional stop means may be provided to limit relative tilting of the vessel and the supporting ring during tilting of the vessel.

3,601,384
TUYERES

Lewis H. Durdin, P. O. Box 1148, Birmingham, Ala.

Filed May 9, 1969, Ser. No. 823,403
Int. Cl. C21b 7/16
U.S. Cl. 266—41 10 Claims

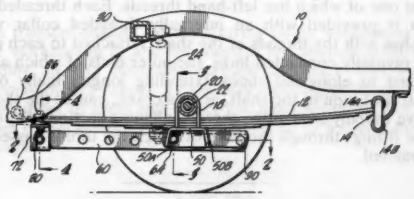


Each of the disclosed tuyeres or other tubular members comprises inner and outer tubular elements, preferably in the form of copper castings, having mating cylindrical surfaces. A series of channels are formed in one of said tubular elements along one of said surfaces to provide fluid coolant passages between the tubular elements. The channels are preferably cast into the corresponding element. Connections are provided for fluid coolant conduits. Welded or soldered joints are provided between the elements.

3,601,385
ATTACHMENT FOR CHANGING REAR END SUSPENSION IN AUTOMOBILES

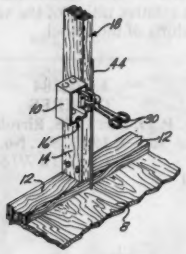
Louis Senter, and Robert E. Johnson, both of Los Angeles, Calif., assignors to Whittaker Corporation

Filed Oct. 22, 1969, Ser. No. 868,435
Int. Cl. B60g 1/02, 11/04
U.S. Cl. 267—48 7 Claims



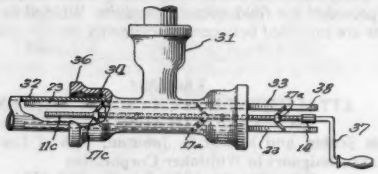
Apparatus mountable on the rear axle of an automobile includes a platelike member to replace that plate element normally found on an automobile for clamping the central portion of the conventional leaf spring and for providing a support for the lower end of a conventional shock absorber. An arm pivotally mounted on such platelike member has one of its ends attached through a pivotal connection to the forwardmost part of the spring, the other end of such arm being releasably secured by a removable pin to a rearwardly extending extension of such platelike member so that the effect of the spring may be altered.

3,601,386
JIG FOR POSITIONING ELECTRICAL BOXES
John W. Estep, Box 685, Ferndale, Wash.
Filed Sept. 15, 1969, Ser. No. 857,722
Int. Cl. B25b 3/00
U.S. Cl. 269—6 5 Claims



The edge of an electrical junction box is inserted an adjustable amount between two plates movable toward and away from each other by suitable means, as tongs. This adjusted amount is the amount allowed for the thickness of a wall to be later constructed and to the surface of which, the edge of the electrical box should project. An adjustable rod determines the selected elevation of the box. While the box is being secured to a stud, the jig permits the box to be manually held in the selected position for installation.

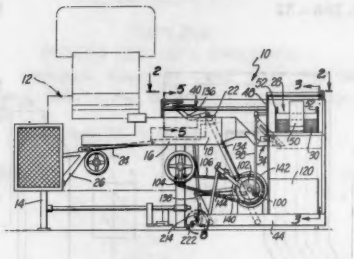
3,601,387
PIPE ALIGNING TOOL
Jack B. Pavlich, 7008 W. 40th St., Stickney, Ill.
Filed Apr. 14, 1969, Ser. No. 815,880
Int. Cl. B23q 3/14
U.S. Cl. 269—48.1 3 Claims



An alignment tool for aligning pipe fittings or short sections of pipe with the main run of pipe preparatory to completing a joint comprises a shaft having several threaded portions, at least one of which has right-hand threads and at least one of which has left-hand threads. Each threaded portion is provided with an internally threaded collar which meshes with the threads of the shaft. Attached to each collar are pivotally connected links, the outer ends of which are attached to elongated shoes extending longitudinally of the shaft. Rotation of the shaft, as by a crank, causes the shoes to move radially outwardly, thereby aligning sections of pipe or pipe fittings through the bore of which the tool is passed and expanded.

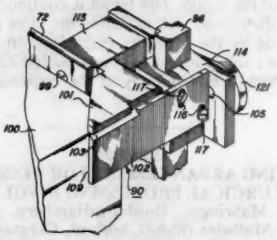
3,601,388
INFEED METHOD AND MECHANISM FOR BOOK-SEWING MACHINE
Jack M. Hilliard, P.O. Box 83, Tioga, Tex., and William W. Tingle, 1215 Queen Ann Court, Glendora, Calif.
Filed Feb. 3, 1969, Ser. No. 795,962
Int. Cl. B65h 39/02
U.S. Cl. 270—54 16 Claims

An infeed method and mechanism for feeding signatures in succession to a Smyth book-sewing machine. According to the invention, the signatures are stacked in a hopper from which they are extracted in succession by a transfer means. This transfer means grips each signature along its folded edge and transfers the signature to gripping means on an infeed carriage. The carriage transports each signature edgewise in a generally vertical attitude with its folded edge uppermost past a signature-parting shoe, which spreads the center signature pages, to a terminal position over the sewing machine



saddle where the signature is released to drop onto the saddle. A malfunction detector is provided to shut down the infeed mechanism in response to failure of the mechanism to deposit a signature on the saddle or improper placement of a signature on the saddle.

3,601,389
SHEET FEEDING APPARATUS
William E. Kramer, Ontario, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed July 3, 1969, Ser. No. 838,906
Int. Cl. B65h 3/56
U.S. Cl. 271—18 4 Claims

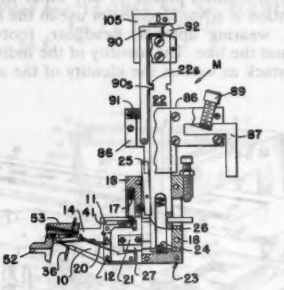


Apparatus to separate and feed individual sheets from the top of a stack in which a snubber plate, acting in conjunction with a knife edge retaining bar, is biased into contact with each forward corner of the topmost sheet in said stack to cause a sheet of predetermined beam strength to be buckled by said snubber and to cause a sheet of greater beam strength to pass between the snubber and the retaining bar.

3,601,390
SHEET SEPARATING APPARATUS
Kenneth O. Morton, Troy, N.Y., assignor to Cluett, Peabody & Co., Inc., Troy, N.Y.
Filed Aug. 29, 1969, Ser. No. 854,225
Int. Cl. B65h 3/22
U.S. Cl. 271—18 11 Claims

Apparatus for separating layers of limp fabric from a stack, including an angular lifting needle and a second, upright, needle. The lifting needle typically penetrates the top layer and then lifts it onto the second needle. The separated layer, secured on the needles, is transported to a work station

where castoff means serve to disengage the fabric from the needles. By adjustment of the lifting needle, more than one



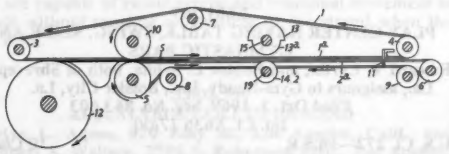
layer can be separated from the stack in a single operation. An additional element may be used to physically restrain the stack from moving up with the ply to be separated.

3,601,391

SHEET FEEDING MECHANISM

Charles Hillingdon Dickinson, Burton Latimer, near Kettering, England, assignor to Timsons Limited, Northamptonshire, England

Filed Feb. 3, 1969, Ser. No. 795,945
Int. Cl. B65h *5/24*
U.S. Cl. 271—46 **3 Claims**



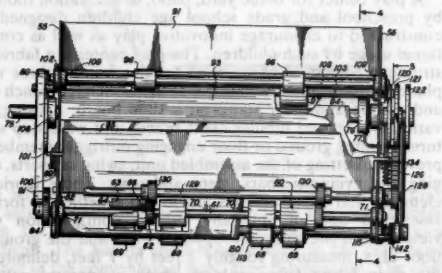
Sheet feeding mechanism for a printing or like machine, comprising a tape conveyor for feeding individual sheets successively to stops and a slow down device for preventing the sheets rebounding from the latter or impact therewith. Device comprises two pairs of feed rollers driven at a slower rotational speed than the linear speed of the tape conveyor, the sheets being fed through the nips of said pairs of rollers. One roller in each pair is arcuately gapped around part of its circumference so that each sheet is released by the rollers at an appropriate time.

3,601,392

SHEET REGISTERING APPARATUS

Merton R. Spear, Jr., Penfield, and John R. Caldwell, Rochester, both of, N.Y., assignors to Xerox Corporation, Monroe, N.Y.

Filed July 3, 1969, Ser. No. 838,929
Int. Cl. B65h *9/06*
U.S. Cl. 271—53 **8 Claims**



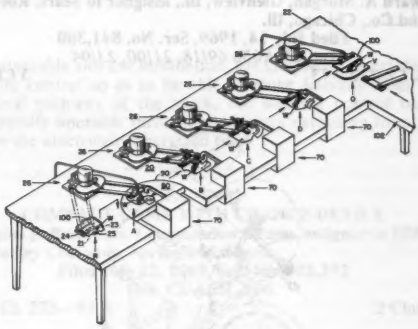
Apparatus to register and align a cut sheet of support material prior to the support material being forwarded to the xerographic transfer station. Register stop rolls are positioned prior to the transfer station and are programmed by means of a cam and gear arrangement to arrest the leading edge of a sheet of material as it is forwarded from a sheet feed tray. The sheet is registered in the stop rolls and is held in friction-driving contact with stop rolls by means of a pair of idler rolls cammed into operative relation therewith. The stop rolls are rotated rapidly to accelerate the sheet of material to the desired constant velocity at which time a second pair of cooperating feed rolls adapted to forward the sheet to the transfer station are cammed into engagement with the moving sheet. For a brief period of time the sheet is being positively driven towards the transfer station by the two drive means. The register stop rolls are programmed to release the sheet prior to completing one revolution and the remaining forwarding function completed by the second set of drive rolls.

3,601,393

APPARATUS FOR TREATING FABRIC WORKPIECES IN SEQUENCE AT A PLURALITY OF WORK STATIONS

George F. Hawley, Bogota, N.J., assignor to Ivanhoe Research Corporation, New York, N.Y.

Division of Ser No. 601,768, Dec. 4, 1966, abandoned
Filed Nov. 19, 1969, Ser. No. 871,326
Int. Cl. B65h *5/10*
U.S. Cl. 271—54 **7 Claims**



A transfer module for transferring fabric workpieces from one workstation to another along a low friction surface, including an arm swingable forward and back with friction gripping means carried by the arm and engageable with the workpieces to slide and orient the workpieces relative to a series of workstations. The arm is shown including a parallel linkage.

3,601,394

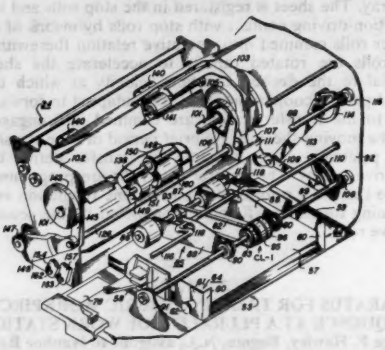
SHEET RETAINING APPARATUS

John M. Lang, Williamson, and Charles J. Kubasta, Rochester, both of, N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed July 3, 1969, Ser. No. 838,907
Int. Cl. B65h *1/04*
U.S. Cl. 271—61 **10 Claims**

An automatically repositionable stack retainer is herein disclosed for supporting a stack of cut sheets of support material as the sheets are separated and fed one at a time from the stack. The retainer consists of a body having a tab pivotally mounted thereon, the tab being normally biased in a position to operatively engage the stack. An automatic

elevating mechanism is provided to automatically raise the retainer when new sheets are added to the stack. The



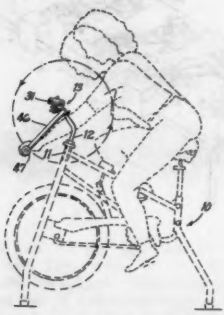
retainer is supported in the elevating mechanism so that the pivotable tab swings out of stack engagement as the retainer is elevated.

3,601,395

ROTATABLE HANDLE BAR FOR EXERCISE APPARATUS WITH ADJUSTABLE ROTATIONAL RESISTANCE CONTROL

Howard A. Morgan, Glenview, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.

Filed July 14, 1969, Ser. No. 841,380
Int. Cl. A63b *69/18, 21/00, 23/04*
U.S. Cl. 272—73 **3 Claims**



A stationary cycle type exercising device having attached to the support for the handle bars an adjustable friction type clamping device that offers a frictional resistance to the manual rotation of the handle bars during an exercise program. The handle bars have a straight intermediate portion received in the clamping device and a pair of hand grips which are offset from, and parallel to, the intermediate portion. The axes of the hand grips are coextensive.

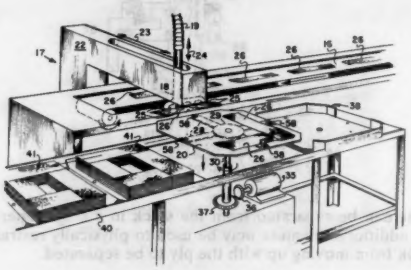
3,601,396

METHOD AND SYSTEM FOR STACKING AND FEEDING WORKPIECES OF LIMP MATERIAL

Herman Rovin, Norwalk, Conn., assignor to Ivanhoe Research Corporation, New York, N.Y.

Filed Sept. 15, 1969, Ser. No. 858,013
Int. Cl. B65h *29/32*
U.S. Cl. 271—86 **10 Claims**

A method and system are disclosed for stacking and feeding workpieces of limp material onto and from conveyable worktables by angularly displacing the successive workpieces in the stack to provide a stable stack in which the individual workpieces retain their oriented positions, accommodating nonuniform thickness or contour. The limp material is such as fabric, cloth, leather, plastic or any other limp material, and the invention is advantageous for use in the manufacture of garments, wearing apparel, headgear, footwear, home furnishings, and the like. The identity of the individual workpiece in the stack as well as the identity of the stack itself is



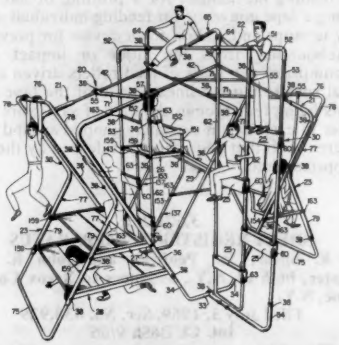
preserved. Workpieces having sections of differing thickness or contour are accommodated by utilizing predetermined angular increments of displacement between the stacking or feeding of respective successive workpieces on the conveyable worktables to provide stacks of workpieces which may take any one of several forms as described. The invention also facilitates the differentiation of the top workpiece from the stack without disturbing the remaining ones.

3,601,397

PLAY CENTER HAVING TABLE, SWING, SLIDE AND GYMNASTIC BARS

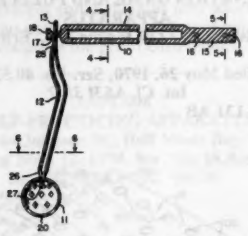
Edward T. Carlin, and Bobbie L. White, both of Shreveport, La., assignors to Gym-Dandy, Inc., Bossier City, La.

Filed Oct. 3, 1969, Ser. No. 863,603
Int. Cl. A63b *17/00*
U.S. Cl. 272—56.5 R **10 Claims**



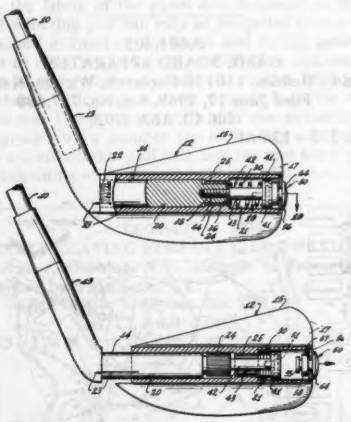
A play center for home yard, patio, or recreation room use by preschool and grade school age children designed and constructed to encourage innovative play as well as conventional usage by such children. The play center is a fabricated structure composed of six main tubular frames; three novel platform assemblies providing a table, associated bench seats and a slide approach platform; a slide board; a swing; and variously disposed tubular cross braces and wide step structures forming ground or floor engaging outrigger members to prevent upsetting of the assembled unit, swing supports, chinning and gymnastic bars, steps and seats. These fabricated elements and subassemblies are joined together to form an assembled unit of generally cubical configuration when viewed from the sides and opposite ends and the ground or floor area, measuring roughly 3 feet by 7 feet, delimited by the main frame subassemblies which cooperates with the main frame subassemblies, table and associated benches to form a house area and tunnellike passage in innovative usage by preschool children.

3,601,398
BALL-HITTING PRACTICE DEVICE
Louis R. Brochman, 310 W. Maple St., Stillwater, Minn.
Filed Apr. 14, 1969, Ser. No. 815,815
Int. Cl. A63b 69/40
U.S. Cl. 273—26 E 7 Claims



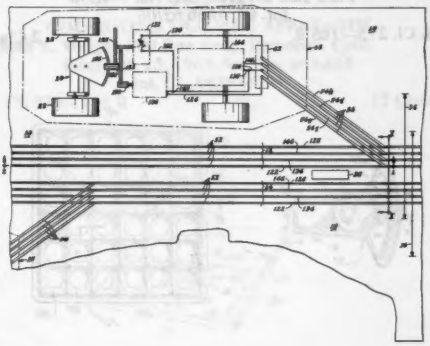
A device for practicing the art of hitting balls is disclosed. This device employs a single flexible nonfilamentary monolithic strand of organic thermoplastic material as the means for suspending or holding a plastic ball. The strand has a thickness of at least about one-sixteenth inch at a minimum. Its thickness is no greater than about three-fourth inch or possibly 1 inch at a maximum. It is flexible and bends to permit varied movement for a ball hit in batting practice. The strand is mounted upon a stiff mounting bracket member through means including an organic plastic ear member; and the arrangement is such that the ear member and strand and ball are capable of swivel erratic and rotational movement as a unit without tangling or knotting of the strand when the ball is hit.

3,601,399
ADJUSTABLE GOLF CLUB HEAD
Martyn L. Agens, 970 Easy St., Los Angeles, Calif., and Robert S. Wallace, 2706 S. Robertson Blvd., Los Angeles, Calif. Assignor by said Wallace to said Agens
Filed Mar. 13, 1969, Ser. No. 807,051
Int. Cl. A63b 53/06
U.S. Cl. 273—79 9 Claims



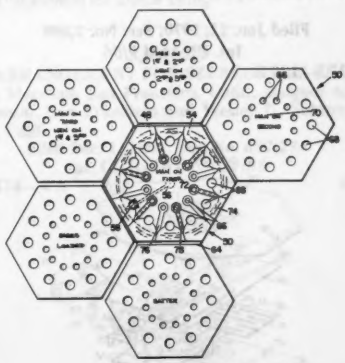
An adjustable gold club comprising a handle shaft, club head assembly and an elongated club head member movable within the club head but unable to be fully withdrawn therefrom. The handle shaft is connected to the club head member in the conventional hosel-type relationship. The club head and club head member possess corresponding splines, whereby when the splines are meshed the club head is prevented from rotating about the longitudinal axis of the club head member. Within the club head are holding structure, retaining components and adjustable elements connecting the club head member to the club head to provide limited axial movement of the member, while also allowing the club head to be angularly varied to the longitudinal axis of the member.

3,601,400
STEERABLE SLOT CAR MEANS
Patrick W. Boles, 3708 E. 38th St., Anderson, Ind.
Filed Mar. 4, 1970, Ser. No. 16,296
Int. Cl. A63h 17/36
U.S. Cl. 273—86 B 9 Claims



A steerable slot car installation, the cars being steerable by remote control so as to be able to move laterally from the nominal pathway of the track, the steering control being electrically operable through conductors extending from the car to the electrically energized track.

3,601,401
COMPACT GAME WITH CHANCE DEVICE
Douglas J. Beck, East Longmeadow, Mass., assignor to Milton Bradley Company, Springfield, Mass.
Filed July 22, 1969, Ser. No. 843,372
Int. Cl. A63f 7/06
U.S. Cl. 273—93 R 2 Claims



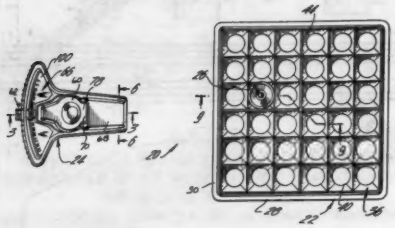
Apparatus for playing a simulated game comprising; a cover convertible into a playing board having self-contained playing pieces; a chance control device including a spinner mounted on a base and a plurality of play determining members hinged to the base and movable into and out of play determining position overlying the spinner. Each of the play determining members has a pair of concentric rings of

openings, in staggered relationship, with outcome indicia pertinent to the particular game adjacent each opening. The game is played by spinning the spinner and then moving the appropriate play determining member into overlying relationship therewith, the outcome of the play being that indicated by the indicia adjacent the opening through which the spinner can be seen.

3,601,402
TARGET GRID FOR RECEIVING CONICAL PROJECTILES

Frank Kohner, New York, N.Y., and Albert Stubbman, Franklin Lakes, N.J., assignors to Kohner Bros., Inc., East Paterson, N.J.

Division of Ser. No. 678,076, Oct. 25, 1967, Pat. No. 3,525,318
Filed Jan. 29, 1969, Ser. No. 794,996
Int. Cl. A63b *63/00*
U.S. Cl. 273—105 R **2 Claims**

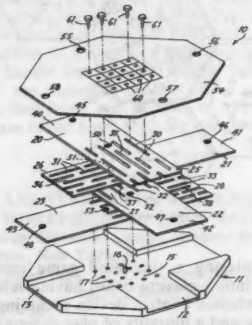


A game constituting a target grid, projectiles and a catapult launcher, wherein the target grid is composed of an array of columns and rows of abutting perforated square inverted pyramidal seats the bases of which lie in a common horizontal plane, the seats being subdivided into differently colored areas for selective target objectives, wherein the projectiles are cones with weighted balls frictionally held interiorly of the noses of the cones and different projectiles are differently colored for intended reception in areas of matching color in the target grid.

3,601,403
SLIDE GAME

Joseph A. Weisbecker, 1220 Wayne Ave., Erlton, Cherry Hill, N.J.

Filed Jan. 12, 1970, Ser. No. 2,009
Int. Cl. A63f *9/06*
U.S. Cl. 273—130 R **6 Claims**

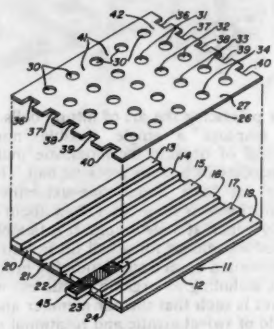


A member provided with intersecting guideways and a plurality of slides slidable along respective guideways in overlying relation, the slides having openings, and an array of apertures overlying the slides for receiving removable pegs inserted through selected apertures and into aligned slide openings.

3,601,404
COMBINATION GAME AND PUZZLE BOARD APPARATUS

Joseph A. Weisbecker, 1220 Wayne Ave., Erlton, Cherry Hill, N.J.

Filed May 26, 1970, Ser. No. 40,535
Int. Cl. A63f *3/02*
U.S. Cl. 273—131 AB **8 Claims**

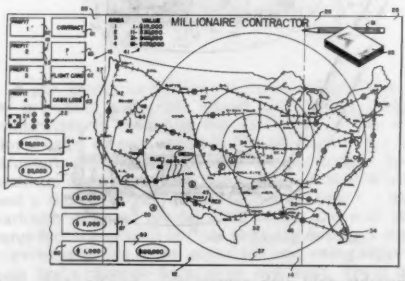


A combination game and puzzle wherein a plurality of subsurface elongate passageways are provided beneath the playing surface of a board, and rows of apertures are formed through the playing surface into either passageways, so that elongate playing pieces are insertable into the passageways for exposure through the apertures of characteristically marked different segments of the playing pieces, said apertures and the interaperture spaces are of the same dimension longitudinally of the rows, and said segments are of the same dimension as said apertures and spaces longitudinally of the rows, whereby adjacent segments may be exposed and concealed, respectively, by an aperture and an adjacent space.

3,601,405
GAME BOARD APPARATUS

Richard C. Hedden, 1101 N. Roosevelt, Wichita, Kans.

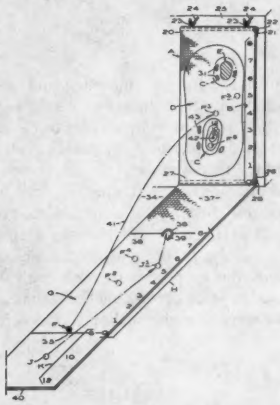
Filed June 17, 1968, Ser. No. 737,600
Int. Cl. A63f *3/02*
U.S. Cl. 273—134 AC **5 Claims**



This invention is a game board apparatus including a large game board member; a plurality of stacks of information card means; a plurality of stacks of profit card means; play or simulated money means; a plurality of player token members; and a die member usable to indicate and achieve movement of the player token members on the game board member.

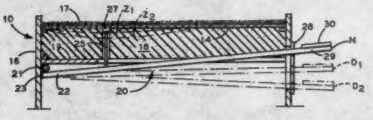
More particularly, this invention is a game board apparatus having a game board member with indicia thereon indicating a plurality of colored hash-marked paths to be taken to various cities in the United States whereby the information card means sets forth various alternative actions to be taken by the individual players in movement of the player token members along the respective paths and such movement is permitted on throwing of the die member. The game board has a plurality of concentric zones thereon into which the colored hash-marked paths extend, the zones determining the relative value of deals, related to the profit card means.

3,601,406
GOLF-PRACTICING APPARATUS
Aldo J. Giusti, 764 Johnson St., Half Moon Bay, Calif.
Filed Mar. 12, 1970, Ser. No. 18,965
Int. Cl. A63b *67/02, 69/36*
U.S. Cl. 273—176 F **9 Claims**



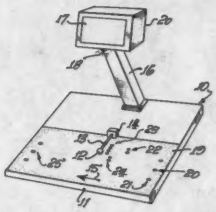
A golf-practicing apparatus having a panel of fabric material disposed in upright position, the panel being provided with the outline of a fairway and a green removably secured to the fabric of the panel and disposed on the fairway. A self-adhering golf ball may be propelled from a tee on a mat arranged in front of the panel and driven against the panel so as to cling to the latter. An elevation distance scale is provided on the panel and graduated in feet. Moreover, a driving distance-indicating scale is provided on the mat in front of the tee. The green is subdivided into subareas, each being designated by a number for indicating a subsequent putt, using a conventional golf ball, and the mat has a putting distance-designating scale disposed in back of the tee.

3,601,407
VARIABLE PLAYING SURFACE GAME DEVICE
Arthur Lorrance, Flushing, N.Y., assignor to Processing Office Furniture Inc., Maspeth, N.Y.
Filed Dec. 9, 1968, Ser. No. 782,280
Int. Cl. A63b *67/02*
U.S. Cl. 273—176 H **4 Claims**



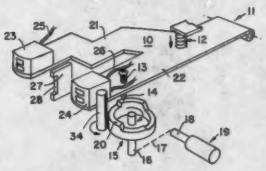
A game device in which the elevation contour of the playing field can be selectively varied by shifting one or more pivotable levers connected to associated discrete regions of a flexible panel defining the playing field. At each lever connection region, the panel can be bent into a localized doubly curved surface configuration, the elevation of which depends upon the angular displacement of the corresponding lever from a neutral position. The flexible panel is supported by a layer of resilient cushioning material which is supported on an underlying rigid panel. The pivotable levers extend from positions below the rigid panel to a position outwardly of a supporting frame which includes latching elements for holding the levers in various adjusted positions. The levers are secured to the flexible panel by link members extending upward from the levers through the rigid panel and cushioning layer. The flexible panel may be covered by a grass simulating material to adapt the device for use by golfers in putting a golf ball into a recessed cup.

3,601,408
GOLF SWING TRAINING APPARATUS
Kenneth K. Wright, 800 Rim Road, Pasadena, Calif.
Filed Oct. 13, 1969, Ser. No. 865,665
Int. Cl. A63b *69/36*
U.S. Cl. 273—186 R **17 Claims**



The time and position of a golf club head are sensed photoelectrically at selected stations along a practice swing, and corresponding characteristics of the swing and of the resulting ball flight are computed electronically and displayed to the player. The lateral club position is sensed accurately at spaced stations near the ball for computation of the swing direction. The clubhead attitude at impact is determined by two sensors spaced along the club face. Matrix circuitry computes the nature of ball flight from the club attitude and swing direction. Ball distance is computed by generating a pulse rate that varies with the ball flight characteristic, and counting the pulses during the portion of the swing between set points. The electronic computing system is reset during a backswing, and all computations are completed during the forward swing. The display is activated automatically as the swing is completed, and remains on until the ball is addressed for a new swing.

3,601,409
HEAD ARRANGEMENT FOR STEREO TAPE PLAYERS
Ralph D. Marshall, San Francisco, Calif., assignor to Milton C. Johnson, San Francisco and Wesley G. Schirman, San Rafael, Calif.
Filed Dec. 1, 1967, Ser. No. 687,254
Int. Cl. G11b *5/56, 21/08*
U.S. Cl. 274—4 A **5 Claims**



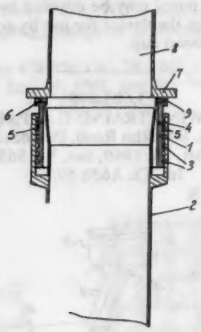
A head arrangement for a stereo tape player comprises a vertically movable support plate having an erasing head and a recording and playback head mounted thereon. A stationary guide is arranged between the heads to maintain a four or eight track stereo tape in its proper position during movement past the heads.

3,601,410

DEVICE FOR FREE JUNCTION BETWEEN TWO PIPES

Paul Andre Guinard, Saint-Cloud, France, assignor to Etablissements Pompes Guinard, Societe Anonyme, France

Filed July 16, 1969, Ser. No. 842,218
Claims priority, application France, July 17, 1968, 159,520
Int. Cl. F16j 15/34; F16l 17/00
U.S. Cl. 277—27 3 Claims



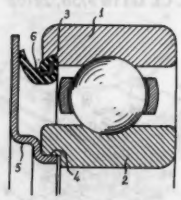
A pipe junction comprising a first pipe, a second pipe having one end in register with the first pipe, a flange on said end of the second pipe, a floating ring cooperating with the first pipe and axially movable relative thereto, an annular plate on the ring for cooperation with the flange permitting transverse movement therebetween and means on the ring responsive to fluid pressure within the pipes to maintain the ring in equilibrium relative to the flange by the combined effects of fluid pressure on the ring within the pipes and fluid pressure acting between the plate and flange.

3,601,411

SEALS FOR ROLLING-CONTACT BEARINGS

Claude Raymond Bourgeois, Annecy, France, assignor to Societe Nouvelle de Roulements, Annecy (Haute Savoie), France

Filed Sept. 6, 1968, Ser. No. 757,900
Claims priority, application France, Sept. 7, 1967, Dec. 7, 1967, 120,260;131,385
Int. Cl. F16j 15/34
U.S. Cl. 277—82 4 Claims



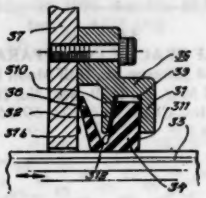
Seal for rolling-contact bearings, characterized by the combination of a resilient seal mounted on the outer race with a deflector member mounted on the inner race or any adjacent surface with which the sealing lip of said seal is in smooth sliding or frictional contact.

3,601,412

ARRANGEMENT FOR MOUNTING AND AXIALLY FIXING A SHAFT SEAL

Sven-Erik Malmstrom, Reftele, Sweden, assignor to Forsheda Gummifabrik AB, Forsheda, Sweden

Filed Feb. 27, 1970, Ser. No. 15,183
Int. Cl. F16j 15/54
U.S. Cl. 277—94 9 Claims



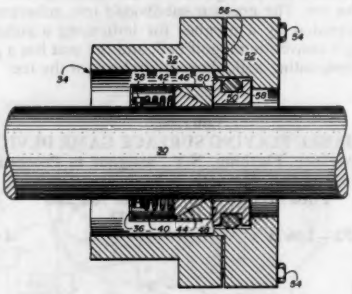
An arrangement for the mounting and axial fixation of shaft seals of the type consisting of a rubber ring stretched around the shaft and providing a point of fastening for an integrating funnel-shaped sealing lip, which seals axially against a sealing surface that is essentially perpendicular to the longitudinal direction of the shaft, characterized by the fact that a support securely fastened at points in connection with the sealing surface and against which a ring-shaped support surface effected on the rubber ring then slides when the shaft turns, whereby the support is so positioned with respect to the sealing surface that the sealing lip assumes a correct axial position with respect to the sealing surface after one revolution.

3,601,413

MECHANICAL SEAL

James R. Darnell, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed July 18, 1969, Ser. No. 842,872
Int. Cl. F16j 15/34
U.S. Cl. 277—96 3 Claims

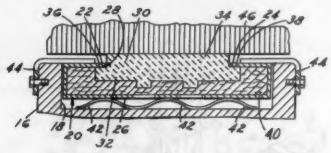


A mechanical seal includes a sealing surface formed by chemical vapor deposition of an extremely hard material, such as silicon carbide. The surface is finished to the required smoothness by optical grinding. The resulting seal has excellent wear resistance as well as high tolerance to corrosive chemicals, extreme temperatures and other adverse operating conditions.

3,601,414
CERAMIC CROSSARM SEAL FOR GAS TURBINE REGENERATORS

Vemulapalli D. Rao, Woodhaven, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 29, 1969, Ser. No. 872,328
Int. Cl. F16j 15/34
U.S. Cl. 277—96 8 Claims

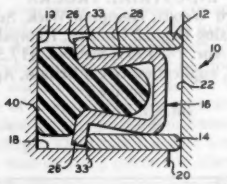


A thin walled steel case has a ceramic shoe projecting through an opening in one side thereof. Externally facing shoulders along the longitudinal edges of the shoe bear against the edges of the case. A fibrous resilient ceramic material fills the remainder of the case and is located between the bottom of the shoe and the base of the case to adsorb deflecting forces.

3,601,415
PISTON RING SPACER-EXPANDER

Philip L. Bond, Richmond, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed Feb. 26, 1970, Ser. No. 14,458
Int. Cl. F16j 9/06
U.S. Cl. 277—140 15 Claims

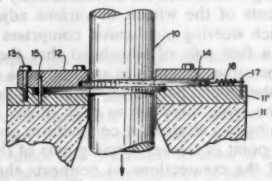


A spacer-expander for rail-ring type oil control piston ring assemblies with a deformable means secured to the spacer-expander ring and extending radially inwardly thereof for providing a temporary internal diameter for the spacer-expander ring which is as small as or smaller than the root diameter of the piston groove which will receive the ring thereby to prevent overlap of the ends of the spacer-expander ring, to center the piston ring assembly, and to inhibit "pop-out" thereof. The deformable means deforms in a manner which is at least partially resilient and is degradable upon being subjected to engine operating conditions.

3,601,416
SELF-ADJUSTING WRAPAROUND SEAL

Aubert Y. Coran, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed June 13, 1969, Ser. No. 833,016
Int. Cl. F16j 15/24
U.S. Cl. 277—151 6 Claims

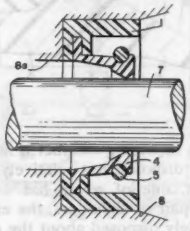


A self-adjustable seal for an axially movable furnace electrode has a sealing strip adapted to wrap completely around the electrode and extend therefrom. One end on the strip is anchored and the end is tensioned to maintain the central portion of the strip in tight engagement with the electrode.

3,601,417
RADIAL PACKING FOR SHAFTS

Jeno Szepesvary, Kufstein, Eichelwang 359/D (Tirol), Austria

Filed Aug. 4, 1969, Ser. No. 847,044
Claims priority, application Austria, Aug. 2, 1968, A 7552/68
Int. Cl. F16j 15/32
U.S. Cl. 277—165 11 Claims

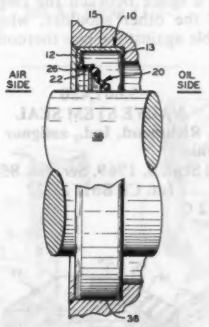


A radial packing for shafts is made of a resilient material and has a housing which surrounds the shaft and has an annular groove therein. A substantially cylindrical packing element has an external supporting rib adjacent to one end thereof with this rib being positioned in the housing groove and an internal lip at the other end thereof for sealing engagement with the shaft. An O-ring of a resilient material surrounds the packing element on the rear side of the sealing lip to urge the lip into sealing engagement with the shaft.

3,601,418
ROTARY SHAFT SEAL

Thomas O. Kosatka, Cicero, Ill., assignor to Dana Corporation, Toledo, Ohio

Filed Sept. 29, 1969, Ser. No. 861,738
Int. Cl. F16j 15/00
U.S. Cl. 277—183 4 Claims

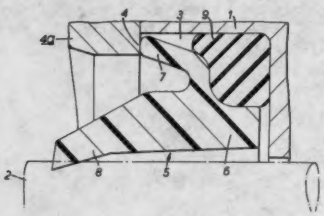


A rotary shaft seal is disclosed comprised of an outer, rigid case member and an annular elastomeric sealing member which is bonded thereto. The sealing member is comprised of a longitudinally extending flexible collar portion, which is bonded at one end to the case member, and a radial flange which extends radially inwardly from the collar portion and has located at its outer end a molded sealing lip which, in the free state, extends axially of the radial flange. The molded sealing lip is substantially square in cross section. When the seal is mounted on a shaft, the radial flange bends and becomes arcuate, thereby placing a lateral surface of the sealing lip in continuous contact with the shaft.

3,601,419
FLUID-PRESSURE-OPERATED PISTON-AND-CYLINDER DEVICE

Alan G. Fern, Hatherley, Cheltenham, England, assignor to Dowty Seals Limited, Gloucester, England

Filed May 29, 1968, Ser. No. 733,117
Int. Cl. F16j *15/32*
U.S. Cl. 277—205 9 Claims

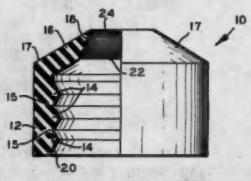


A ringlike sealing or wiping member is interposed between a pair of coaxially disposed but relatively slidably engaged cylindrical surfaces, one of which has a stepped contour thereon defining a pair of shoulders, the end walls of which are radially oppositely disposed about the cylindrical axis of the surfaces and spaced apart from one another by a circumferential recess in the one surface. In addition, one of the shoulders is spaced apart from the other of the surfaces, to form a radial clearance which allows for substantial relative radial movement therebetween. The ringlike member is interposed in the recess between the surfaces, and the main body of the member is yieldably biased along the axis of the surfaces in the direction of the radial clearance and the end wall of the one shoulder. The body has a continuously closed annular construction between the inner and outer peripheries thereof, and there are relatively flexible annular limbs on the inner and outer peripheral portions of the member which project from the main body of the same in the aforesaid direction of the bias thereon, and are spaced apart form one another at the ends thereof relatively remote from the body of the member, so that the limbs and body can flex in relation to one another. The end portion of one of the limbs is engaged with the end wall of the one shoulder, whereas the end portion of the other limb extends from the recess into the radial clearance between the surfaces and is engaged with the other surface thereof, in the clearance. There are also means including a space between the ringlike member and the end wall of the other shoulder, whereby the ringlike member is shiftable against the bias thereon.

3,601,420
VALVE STEM SEAL

John D. Binford, Richmond, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed Sept. 8, 1969, Ser. No. 855,899
Int. Cl. B61f *15/22*
U.S. Cl. 277—212 C 10 Claims

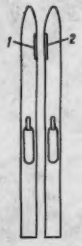


A valve stem seal for sealing against the reciprocating stem of a poppet valve is provided. The seal is formed of an elastomeric material. The seal comprises an annular wall that grips the valve guide and integral with the annular wall, a conical wall that terminates in a conical sealing surface. This sealing surface has annular grooves formed therein and forms a progressively increasing interference fit with the valve stem.

3,601,421
DEVICE FOR THE IMPROVEMENT OF THE DIRECTIONAL GUIDANCE OF SKIS

Jurg M. Ris, Lenzenwiestrasse 2, Zollikon, Switzerland

Filed May 19, 1969, Ser. No. 825,622
Claims priority, application Switzerland, Mar. 13, 1969, 3828/69
Int. Cl. A63c *5/06*
U.S. Cl. 280—11.37 E 2 Claims

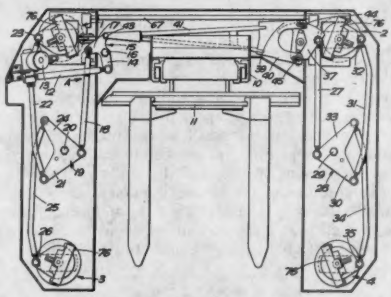


A device for the improvement of the guidance of a pair of skis, the device comprising an upstanding ridge means disposed on the upper surface of the forward portion of each ski directly along the edge thereof nearest to the adjoining ski of the pair whereby, lateral guidance of skis, particularly of skis having small thickness, is greatly improved and their superimposition or crossing during running is obviated.

3,601,422
INDUSTRIAL TRUCKS

Alexander Richard Woods, Hampton Wick, Surrey, England, assignor to Lansing Bagnall Limited, Hampshire, England

Filed Apr. 18, 1969, Ser. No. 817,537
Claims priority, application Great Britain, Apr. 23, 1968, 19030/68
Int. Cl. B62d *3/02*
U.S. Cl. 280—91 7 Claims



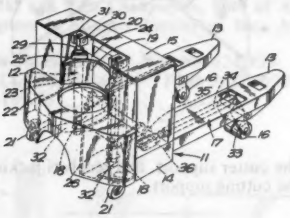
An industrial truck has four ground wheels, four hydraulically operated rack and pinion devices for individually adjusting each wheel angularly about a vertical axis whereby the truck may be driven in a plurality of alternative directions according to the adjusted positions of the wheels, and a steering mechanism for simultaneously effecting steering movements of the wheels in various adjusted positions thereof, which steering mechanism comprises a first linkage connecting a first pair of wheels so that those wheels are steered in the same direction as each other, a second linkage connecting the second pair of wheels so that those wheels are steered in the same direction as each other, and a member connectable by two alternative connections on opposite sides of the pivot point of a lever forming part of the second linkage. One of the connections so connects the two linkages that the two pairs of wheels are steered in the same direction and the other connection so connects the two linkages that the two pairs of wheels are steered in opposite directions.

3,601,423

INDUSTRIAL PALLET AND STILLAGE TRUCKS

Cecil Goodacre, Basingstoke, England, assignor to Lansing Bagnall Limited, Basingstoke, England

Filed June 25, 1969, Ser. No. 836,482
Claims priority, application Great Britain, June 27, 1968, 30,779/68
Int. Cl. B66f 9/06
U.S. Cl. 280—43.12 8 Claims



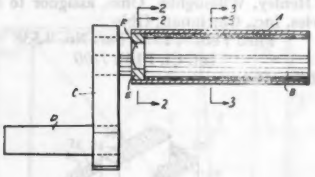
An industrial pallet truck comprises a body portion, a load-carrying portion mounted for up-and-down movement relatively to the body portion, two hydraulic rams for raising a root portion of the load-carrying portion, and a linkage operable by movement of the root portion relatively to the body portion and including ground engaging members for raising and lowering the end of the load-carrying portion remote from the root portion, in unison with the root portion. Each ram comprises a cylinder connected to the body portion and a plunger connected to the load-carrying portion and the linkage comprises two operative levers each pivotally connected at its fulcrum to said root portion, each lever also being pivotally connected directly to the lower end of the cylinder of one of the rams, so that up-and-down movement of the root portion imparts pivoting movement to the lever to operate said linkage. The truck has fork arms which may be attached to the load-carrying portion in alternative positions.

3,601,424

ROAD-VEHICLE SUSPENSION SYSTEMS

Barrie J. Badland, Bolton, England, assignor to Mechanical Services (Trailer Engineers) Limited

Filed Sept. 30, 1969, Ser. No. 862,312
Int. Cl. B60g 11/22
U.S. Cl. 280—124 5 Claims



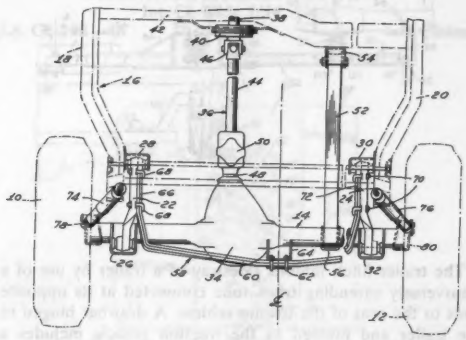
A vehicle suspension system in which stub-axles for a pair of laterally spaced road wheels are mounted at the free ends of arms arranged to swing about a common horizontal axis, and in which each such arm and provided, at the end and side remote from the stub-axle, with a spindle extruding parallel to the latter and journaled at least at the outboard end of a tubular housing, the remainder of such spindle being of square section and having a length of rubber or other elastomeric cord compressed between each face thereof and an adjacent internal corner of the housing.

3,601,425

REAR SUSPENSION SYSTEM FOR A MOTOR VEHICLE

Achille C. Sampietro, Bloomfield Hills, and Kenneth L. Hoyt, Dearborn, both of, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 651,783, July 7, 1967, Pat. No. 3,469,649
Filed June 5, 1969, Ser. No. 830,682
Int. Cl. B60g 11/18
U.S. Cl. 280—124 10 Claims



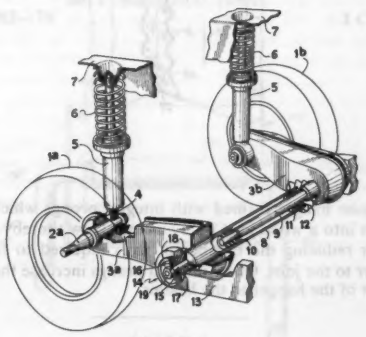
A rear suspension system for a motor vehicle having a solid rear axle housing positioned by a pair of conventional upper suspension arms and a pair of lower suspension links. One of the lower links is the vehicle drive shaft which performs the dual function of transmitting torque and positioning the axle housing. A laterally extending leaf spring interconnects the two upper suspension arms and is loaded in torsion to support the chassis on the axle housing.

3,601,426

VEHICLE REAR ASSEMBLY

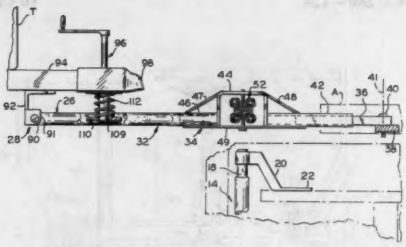
Jacques Hury, Rueil-Malmaison, France, assignor to Automobile Peugeot, Paris, France and Regie Nationale des Usines Renault, Billancourt, France

Filed Oct. 31, 1969, Ser. No. 872,998
Claims priority, application France, Nov. 13, 1968, 173,441
Int. Cl. B60g 11/32
U.S. Cl. 280—124 15 Claims



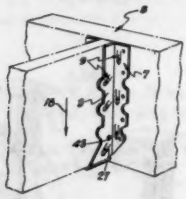
Rear assembly for motor vehicle, of the type comprising independent wheels and trailing suspension arms, wherein each suspension arm has fixed thereto a shaft member extending transversely with respect to the longitudinal axis of the vehicle, said shaft members being connected at their outer ends to the suspended part of the vehicle and being interconnected at their inner ends.

3,601,427
ANTISWAY TRAILER HITCH
Charles F. Holt, Rte. 2, Box 220, Corvallis, Oreg.
Filed June 20, 1969, Ser. No. 835,146
Int. Cl. B62d 53/00
U.S. Cl. 280—406 A 11 Claims



The trailer hitch inhibits sideway of a trailer by use of a transversely extending track tube connected at its opposite ends to the rear of the towing vehicle. A drawbar hinged to the trailer and pivoted to the traction vehicle includes a pivoted guide sleeve movable on rollers laterally along the tube for transmitting towing power between the towing and towed vehicles. A forward portion of the drawbar extends to permit lateral movement of the guide sleeve on the track tube. The drawbar has a swivel coupling permitting relative rolling movement between the vehicles. A rear portion of the drawbar has a load equalizer including a coil spring operable in conjunction with the trailer jack to vary the distribution of the axle loads between the trailer and towing vehicle.

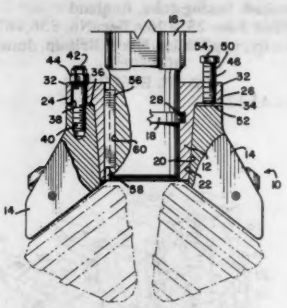
3,601,428
PRONGED JOIST HANGER
Tyrell T. Gilb, Berkeley, Calif., assignor to Simpson Company
Filed Dec. 11, 1969, Ser. No. 884,170
Int. Cl. F16b 3/00
U.S. Cl. 287—20.94 3 Claims



A joist hanger formed with integral prongs which can be driven into a wood joist by a hammer blow thereby eliminating or reducing the number of nails required to fasten the hanger to the joist. Other integral prongs increase the holding power of the hanger to the header.

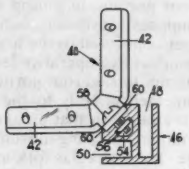
3,601,429
PILOT CUTTER MOUNTING ASSEMBLY
William D. Coski, Mercer Island, Wash., assignor to Lawrence Manufacturing Company, Seattle, Wash.
Filed June 19, 1969, Ser. No. 834,745
Int. Cl. F16d 1/06
U.S. Cl. 287—53 13 Claims

A pilot cutter mounting assembly comprising a segmented collar having both a keyway and an annular groove for engaging the cutter shaft with both a key and an annular thrust ring. The collar has a radial rim which supports studs for



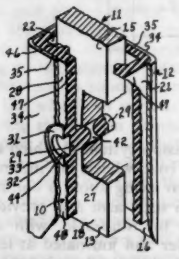
mounting the cutter support, and receives jacking screws for removing the cutting support.

3,601,430
JOINTS BETWEEN STRUCTURAL MEMBERS
Hendrik Pieter Zwennis, 50 Murray Avenue, Meredale, Johannesburg, Republic of South Africa
Filed Dec. 2, 1968, Ser. No. 780,523
Claims priority, application, Republic of South Africa, Dec. 13, 1967, 67/7489
Int. Cl. F16b 7/00
U.S. Cl. 287—54 1 Claim



A joint between structural members such as edge members of panelled furniture, the joint being secured by a bracket having leaves which each abut and are secured to one of the structural members. The leaves each have an axis and the axes intersect to define a plane, the faces of the leaves abutting the structural members being obliquely inclined to that plane.

3,601,431
RESILIENT FITTING
John W. Henley, Willoughby, Ohio, assignor to Eagle-Picher Industries, Inc., Cincinnati, Ohio
Filed Feb. 9, 1970, Ser. No. 9,535
Int. Cl. F16b 7/00
U.S. Cl. 287—104 7 Claims



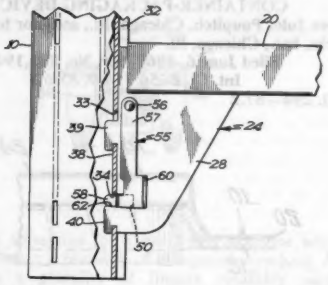
A one-piece resilient fitting of a tubular configuration for connecting a lever arm in axial alignment with a sleeve. The

fitting is particularly adapted to isolate vibrations in the sleeve from the lever arm, and vice versa. Further, the fitting is adapted to transmit a positive force from the lever arm relative to the sleeve in the transverse direction, but is only adapted to resist, i.e., not transmit, axial motion of the lever arm relative to the sleeve. In assembly, the tubular fitting is designed to be snap-fit in nested relation within the sleeve, and then to permit the lever arm to be snap-fit in nested relation within the tubular fitting.

3,601,432
DISPLAY FIXTURE FRAME STRUCTURE

Jay G. Fenwick, and Earl Christensen, both of Albert Lea, Minn., assignors to Streater Industries, Inc., Albert Lea, Minn.

Filed May 15, 1969, Ser. No. 824,933
Int. Cl. E04g *3/08, 7/00;* **F16b** *5/07, 7/22*
U.S. Cl. 287—189.36 **1 Claim**

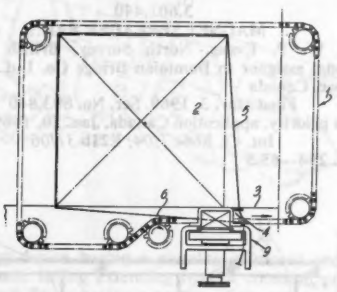


The invention relates to a frame assembly having general utility and specific utility for a display fixture of a type commonly found in department stores. A horizontal sway brace for the fixture is connected by means of hooks to vertically extending members referred to as standards. A pivotally mounted locking device is provided for locking the hooks in their inserted position.

3,601,433
KNOTTING MECHANISM

Michael Ivan Mercer, Kent; Terry Arthur, Fleming, Kent; Sydney Tyes, Clacton-on-Sea, and Donald Sutehall, Harlow, all of, England, assignors to Harris Intertype Limited, Slough, England

Filed Nov. 5, 1969, Ser. No. 874,296
Int. Cl. A01d *59/04*
U.S. Cl. 289—2 **12 Claims**

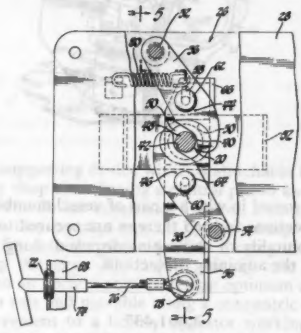


This invention relates to a knotter mechanism for a bundle tying machine, including a sliding knotter carriage having a knotter rotatably mounted thereon, a rotatably mounted cam plate, whereby rotation of the cam plate will cause sliding movement of the carriage between an operative and an inoperative position a drawslide mechanism and twine lifter arm correctly to position a length of twine and means to rotate and actuate the knotter when the carriage is in the operative position to tie a knot in the twine.

3,601,434
HOOD LATCHING ARRANGEMENT

Donald E. Fargo, Warren, and Mark B. Williamson, Royal Oak, both of, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 24, 1969, Ser. No. 879,179
Int. Cl. E05c *3/34, 3/40*
U.S. Cl. 292—46 **4 Claims**

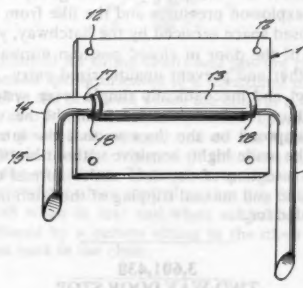


A vehicle hood latching arrangement includes a striker mounted on the hood member and a pair of retaining levers pivotally mounted on a body member for movement between latched and unlatched positions. The retaining levers are situated in a generally parallel line relationship operative to maintain at least one of the retaining levers in the latched position thereof during rapid horizontal acceleration or deceleration of the vehicle in any direction. An operating lever is operatively connected to each retaining lever for moving the latter from latched to unlatched positions and the retaining levers are balanced on the operating lever to prevent inertially motivated unlatching of the hood member.

3,601,435
GATELOCK

John H. Fouser, Box 196, Carthage, Mo.

Filed Apr. 22, 1969, Ser. No. 818,232
Int. Cl. E05c *3/06, 19/00*
U.S. Cl. 292—78 **1 Claim**



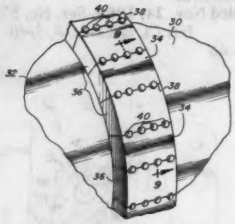
A lock assembly for a gate, lock assembly comprising a catch eyebolt engageable by a pivotable locking bar carried in a bar tube of a mounting plate, the mounting plate being secured to a gate and the catch eyebolt being secured to a post.

3,601,436

PRESSURE VESSEL WITH SHEAR PIN CONSTRUCTION

Svend M. Jorgensen, Tenafly, N.J., assignor to Foster Wheeler Corporation, Livingston, N.J.

Filed July 15, 1969, Ser. No. 841,713
Int. Cl. R65d *45/00, 53/00*
U.S. Cl. 292—256 14 Claims



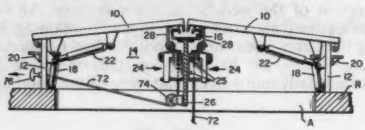
A pressure vessel in which a pair of vessel members having meshing projections formed thereon are secured together by means of a plurality of shear pins disposed along the interface between the adjoining projections.

3,601,437

EMERGENCY-RELEASABLE LATCH FOR HATCHWAY DOOR

Robert J. Lyons, 1060 Ridge Road, Hamden, Conn.

Filed July 6, 1970, Ser. No. 52,342
Int. Cl. E05c *15/00, 19/10;* E05f *15/20;* F23l *17/02*
U.S. Cl. 292—256.5 9 Claims



An emergency-releasable latch mechanism is disclosed for use with roof or deck hatchways having a hinged door or cover heavily biased by spring or other means to full open position in order to vent quickly in emergency smoke, noxious fumes, explosion pressures and the like from a room or similar enclosed space serviced by the hatchway, yet provide for latching of the door in closed position normally to shut out the weather and prevent unauthorized entry. A particularly compact and mechanically simple lever system is provided to reduce the load reaction from the heavy opening bias forces imposed on the door so that the latch tripping control can be made highly sensitive without sacrificing positive latched retention of the door under normal conditions. Both automatic and manual tripping of the latch in emergency are provided for.

3,601,438

TWO-WAY DOOR STOP

George Stuart, 57 Kingsbury Road, New Rochelle, N.Y.

Filed July 13, 1970, Ser. No. 54,348
Int. Cl. E05c *17/54*
U.S. Cl. 292—343 3 Claims

A one piece portable wedging device with two different tapers, permitting the device to be used with different heights. For example, the device may be used as a door stop, and if one of the tapers does not give sufficient height to permit the device to be wedged in the space between the bottom

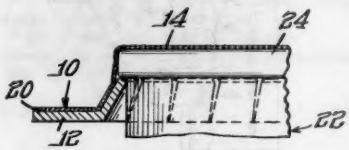
of a door and the floor, the device may be turned to present the other taper giving a greater height to the device.

3,601,439

CONTAINER-PACKAGING DEVICE

Ougljesa Jules Poupitch, Chicago, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.

Filed June 6, 1969, Ser. No. 831,194
Int. Cl. B65d *71/00, 85/62*
U.S. Cl. 294—87.2 8 Claims



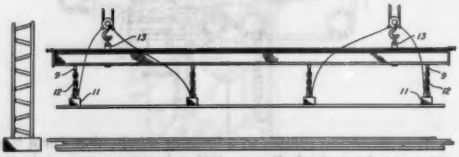
This invention relates generally to a multipackaging device or carrier for containers and more particularly to devices for accommodating containers having a circumferential bead adjacent one extremity thereof, as for example the conventional bead on a can. The embodiment of the invention disclosed herein includes a paperboard sheet which is apertured to provide a plurality of pockets for receiving the extremity of beaded containers. The circumferential marginal area adjacent each aperture is adapted to be deflected out of the plane of the paperboard sheet upon telescopic association of a beaded container therewith so as to position the edge of said marginal area for engagement with the underside of the container bead. A flexible plastic film is adhered to the upper side of the paperboard sheet in superimposed relation with respect to the circumferential marginal areas. The portion of the film which superimposes the marginal areas serves to maintain the edge of the deflected margin in underlying relation with respect to the bead of a telescopically associated container.

3,601,440

MAGNET SPREADER BAR

George W. P. Evans, North Surrey, British Columbia, Canada, assignor to Dominion Bridge Co. Ltd., Montreal, Quebec, Canada

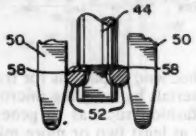
Filed Mar. 3, 1969, Ser. No. 803,840
Claims priority, application Canada, Jan. 20, 1969, 040,652
Int. Cl. B66c *1/04;* E21b *31/06*
U.S. Cl. 294—65.5 4 Claims



An electromagnet carrier for use in lifting elongated metallic objects in which the long axes of the magnets may be

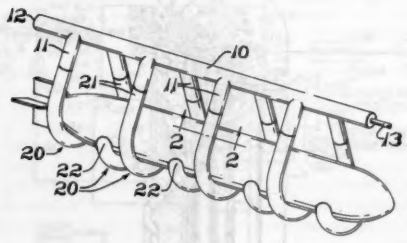
oriented to be at right angles to the axis of the plate when elongated steel plates are raised and the long axis of the magnets may be rotated to be parallel with the long axis of the article when lifting long narrow flexible items. Movement of the magnets is accomplished by bringing a long rod associated with the magnet into contact with the gantry column of the crane causing the magnets to rotate to the desired position.

3,601,441
GRIPPING APPARATUS FOR PACKAGING MACHINE
Lazzaro Pezza, Bronx, N.Y., assignor to Swahettes, Inc., Wayne, N.J.
Division of Ser. No. 577,291, Sept. 6, 1966, Pat. No. 3,456,425
Filed Jan. 7, 1969, Ser. No. 801,905
Int. Cl. B65b *5/08*
U.S. Cl. 294—87 SH **3 Claims**



A gripping apparatus for a packaging machine which engages and releases a plurality of elongated members. A body member has a plurality of fingers rotatably supported thereon. A comb device is mounted on the body member and has a plurality of teeth extending therefrom for cooperating with the fingers to engage and release a plurality of swabs. An actuating mechanism is engaged with the fingers and is operable to rotate the fingers to engage a plurality of swabs in cooperation with the teeth and to rotate the fingers in the opposite direction to release the swabs.

3,601,442
GRIPPING DEVICE
Roy L. Orndorff, Jr., Kent, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
Filed Jan. 26, 1970, Ser. No. 5,594
Int. Cl. B25b *11/00*; **B66c** *1/42*
U.S. Cl. 294—99 **7 Claims**

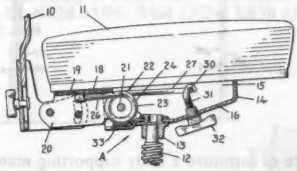


A gripping device having a plurality of closed end "fingers" of elastic tubing extending from a common pressure manifold, each finger having a portion of the transverse wall section provided with longitudinal cords of tension resistant material embedded therein along only one side of the tubing. In the relaxed state, the fingers are substantially linear, but upon introduction of a pressurized fluid therein, the fingers curl toward a common central region for gripping. Upon release of the pressurized fluid, the elastomeric fingers of the device return to substantially a linear state releasing the grip.

3,601,443
TRAY SUPPORT FOR HYDRAULIC BEAUTY SHOP CHAIR
Donald Jones, 6337 Lake Como Ave., San Diego, Calif.
Filed July 24, 1969, Ser. No. 844,486
Int. Cl. A47c *7/62*
U.S. Cl. 297—188 **5 Claims**

A tray-supporting device which is attachable to a hydraulic lift beauty shop chair having a central piston and an upstanding base. The device consists of a sleeve, a bent piece of tubing, and a tray or trays carried by the tubing. The sleeve is coaxially fitted to the piston for free turning thereabout, and rides atop the base. The tubing has an arm fixed to the sleeve. and an upright post spaced an optimum distance from the piston axis and movable along a concentric path to locations convenient to a beauty operator working around the chair. The trays are free to turn on the post and are adjustably mounted at optimum levels for the operator, the trays being maintained at such levels independently of the height of the chair.

3,601,444
CHAIR CONTROL WITH SUPPORT FOR THE TORSION SPRING
Joseph T. Doerner, Waterloo, Ontario, Canada, assignor to Doerner Products Co. Limited, Waterloo, Ontario, Canada
Filed Nov. 25, 1969, Ser. No. 870,319
Claims priority, application Canada, Sept. 23, 1969, 062,731
Int. Cl. A47c *3/00*
U.S. Cl. 297—300 **2 Claims**

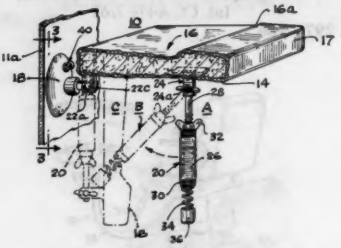


A chair control for tilting chairs and posture chairs having a coiled torsion spring oriented in a horizontal plane with its axis parallel to the pivots on which the control tilts. The chair control has two frames which are pivotally connected to permit relative pivotal movement, one of the frame members being mountable on the top end of the chair post which is carried by the chair base. The torsion spring is supported by a fixed frame of the chair control so that it is fully supported thereby both when at rest and when subjected to torsional stresses induced by a person sitting in the chair when such person leans back in the chair.

3,601,445
HEADREST STRUCTURE FOR VEHICULAR USE
Vasilios Glynias, 117 Janice Lane, Addison, Ill.
Filed Feb. 6, 1969, Ser. No. 796,995
Int. Cl. A47c *7/36*
U.S. Cl. 297—404 **5 Claims**

An improved portable headrest structure for vehicular use is described which may be releasably attached to a window of

a vehicle or the like and support a user's head positioned in a natural, sidewise-tilted manner. Effective shock absorption is obtained by a pair of soft, resilient rubber section cups intended for attachment to a vehicular surface and a spring-

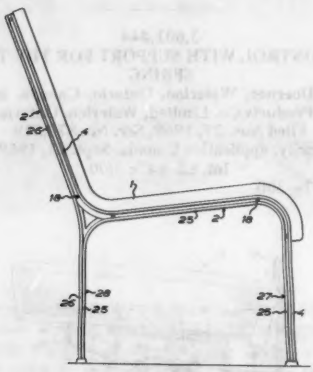


supported front support member together with a cushion formed of foam rubber or the like. Provision is made for quick release of the suction cups from the vehicular surface by a release valve assembly incorporated as an integral part of the suction cups.

3,601,446
PIECE OF FURNITURE

Eric Sigfrid Persson, Horby, and Signe Persson-Melin, Malmo, both of, Sweden, assignors to Expo-Nord AB, Horby, Sweden

Filed Sept. 24, 1969, Ser. No. 860,745
Claims priority, application Sweden, Nov. 21, 1968, Mar. 21, 1969, 15,840/68;3,943/69
Int. Cl. A47c *5/00, 1/12, 11/00*
U.S. Cl. 297—445 **8 Claims**

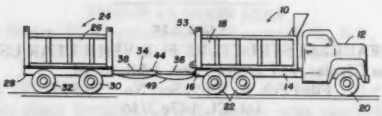


In a piece of furniture a body-supporting material has two opposed parallel marginal portions which are anchored in channels in two frame bars extending along said marginal portions.

3,601,447
DUMP TRUCK-TRAILER COMBINATION

Robert E. Kelley, 159 32nd St., Cedar Rapids, Iowa

Filed June 2, 1969, Ser. No. 829,670
Int. Cl. B60p *11/18, 1/30*
U.S. Cl. 298—14 **10 Claims**

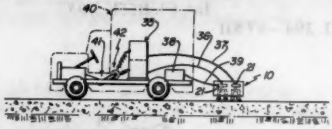


A truck-trailer combination for hauling and dumping bulk materials. The rig includes a trailer and a towing vehicle and has two tiltable dump bodies which are separate while the rig is moving over the road, but when the contents are to be unloaded, the one dump body is joined to the other and the two dump bodies are tilted together and unloaded as a single unit.

3,601,448
METHOD FOR FRACTURING CONCRETE AND OTHER MATERIALS WITH MICROWAVE ENERGY

Stanford C. Stone, Deerfield, Ill., assignor to Gas Development Corporation, Chicago, Ill.

Filed Apr. 21, 1969, Ser. No. 817,783
Int. Cl. E01c *23/09;* **E21c** *37/18*
U.S. Cl. 299—14 **3 Claims**

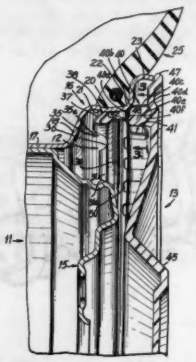


A low-noise method and apparatus for fracturing concrete and other solid materials by coupling microwave energy into the material in a fashion such as to generate independent heat patterns using at least two or more microwave applicator horns that are spaced apart from each other. The power density of the microwave energy coupled into the solid material is established and maintained below a predetermined threshold level above which violent and explosive type reactions occur. The spaced heat patterns or zones produced cause the heated material to expand, so as to place high tensile forces or stresses on the unheated material between the heat patterns. These forces or stresses cause failure to occur between the heat patterns, and ultimately across the heat patterns themselves.

3,601,449
WHEEL, WHEEL COVER AND RETAINING RING ASSEMBLY

Herbert Buerger, Walton, N.Y., assignor to Del Krome Corp., Walton, N.Y.

Filed Aug. 19, 1969, Ser. No. 851,165
Int. Cl. B60b *7/04*
U.S. Cl. 301—37 P **4 Claims**

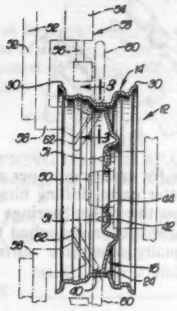


A wheel cover is assembled with a metal retaining ring which also grips the rim of a wheel. Thereafter the cover can be pried off while leaving the retaining ring on the wheel. The cover has an annular cylindrical flange. The retaining ring comprises springfingers gripping the outer side of the flange, alternating with springfingers gripping the inner side of the flange. The cover is made of nonmetallic material.

3,601,450
VEHICLE WHEEL

Harold R. Baker, Lynwood, Calif., assignor to Norris Industries, Inc., Los Angeles, Calif.

Filed Apr. 28, 1969, Ser. No. 819,683
Int. Cl. B60b *23/00*
U.S. Cl. 301—63 R 4 Claims

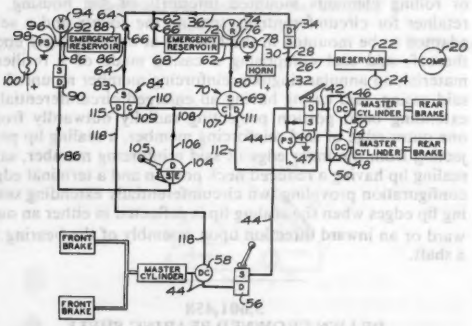


A vehicle wheel and method of and apparatus for assembling wherein the wheel includes an annular rim and a spider inserted within the rim bridging the area defined by the rim. The spider is secured to the rim in a plurality of places by a series of overlapping seam welds. In assembling the wheel a method of utilizing opposed welding electrodes engaging the rim and spider, respectively, is employed, as well as apparatus for welding and moving the wheel to create an overlapping seam weld.

3,601,451
EMERGENCY BRAKE CONTROL SYSTEM

Curtis F. Cummins, Decatur; Kenneth W. Kelly, Latham, and Larry G. Warren, Peoria, all of, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed May 15, 1969, Ser. No. 824,937
Int. Cl. B60t *13/28*
U.S. Cl. 303—13 6 Claims

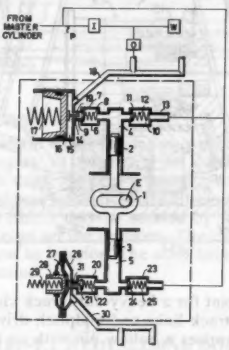


A fluid pressure emergency brake control system has a novel valving arrangement which permits the operator of a vehicle to apply and release the brakes so long as the fluid pressure in the system is above a predetermined level and after the fluid pressure drops below the predetermined level only allows the operator to apply the brakes.

3,601,452
FLUID RETURN SYSTEM FOR ANTILOCKING VEHICLE BRAKES

Dietrich Brunner, Edingen, Germany, assignor to Teldix GmbH, Heidelberg, Germany

Filed July 22, 1969, Ser. No. 843,691
Claims priority, application Germany, July 27, 1968, P 17 80 058.7
Int. Cl. B60t *8/12, 13/14*
U.S. Cl. 303—21 F 3 Claims

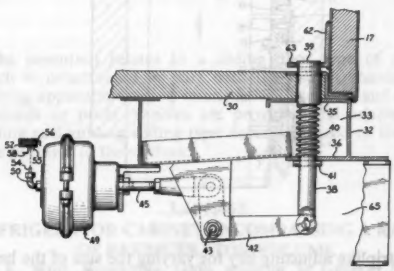


A reciprocating pump for returning brake fluid bled from the brake slave cylinder of a vehicle wheel during automatic, antilocking brake control is connected through a check valve to an expansible chamber accumulator receiving the fluid bled off. When the chamber is nearly empty a pin carried by the movable wall of the accumulator engages the check valve and holds it open so that the fluid is merely transferred back and forth between the pump and the accumulator to prevent the pump from running dry.

3,601,453
SAFETY LOCK FOR TRAILER DOORS

Seymour Silverman, 5070 N. Bay Road, Miami Beach, Fla.

Filed July 1, 1969, Ser. No. 838,252
Int. Cl. B62d *53/06*; B60t *13/24*; E03b *51/02*
U.S. Cl. 303—89 5 Claims



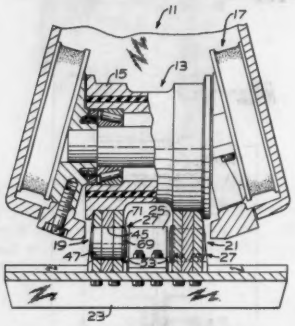
A lock for the door of a trailer to inhibit pilfering from an unattended trailer, as when one is in "piggyback" transit by rail or when it is in a yard unattended by a tractor operator without an attached tractor. A power lock for the door is mounted in a position inaccessible from the outside of the trailer and for its operation requires power such as air pressure or 12-volt electricity, which is available from a tractor, to unlock it.

3,601,454

CARTRIDGE JOINT FOR HEAVY DUTY TRACK CHAIN

Harold L. Reinsma, Dunlap, Ill., assignor to Caterpillar Tractor Co, Peoria, Ill.

Filed June 19, 1969, Ser. No. 834,626
Int. Cl. B62d 55/20
U.S. Cl. 305—11 5 Claims



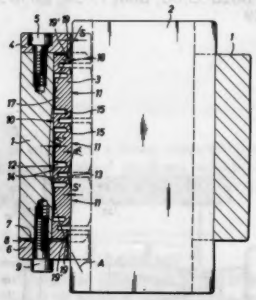
A cartridge joint for a heavy-duty track chain having fork-and-blade-type track links and midpitch drive lugs. The cartridge joint comprises a hollow pin with an integral head on one end thereof, a flanged ring fixedly mounted on the other end thereof, and an intermediate rotatable bushing which is kept from moving axially on the pin by abutment surfaces on the head and ring. The midpitch drive lugs are provided with retaining locks to hold the cartridge joints in place.

3,601,455

DEVICE FOR ADJUSTING THE SIZE OF A BEARING CLEARANCE BETWEEN TWO ELEMENTS

Rudolf Spieth, 12 Kennenberg Str., D 7300 Esslingen (Neckar)-Kennenburg, Germany

Filed Apr. 4, 1969, Ser. No. 813,413
Claims priority, application Germany, Apr. 11, 1968, P 17 50 244.2
Int. Cl. F16c 27/06
U.S. Cl. 308—3 R 15 Claims



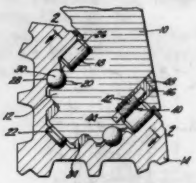
A striplike adjusting key for varying the size of the bearing clearance between the adjacent surfaces of a slide carriage and a fixed guide block so as to be movable relative to each other at different degrees of friction or to lock them to each other. The key is substantially meander shaped by being provided with narrow transverse recesses in its opposite sides, and its ends may be pressed toward each other by tightening screws so as to cause a buckling effect whereby some parts of the remaining opposite longitudinal surfaces of the key are more or less pressed against the adjacent surface of the slide carriage and of the guide block, respectively.

3,601,456

ANTISKEW DEVICE FOR DRILL BIT BEARINGS

Myron D. Becker, 2848 Alto Vista Drive, Newport Beach, Calif.

Filed Mar. 23, 1970, Ser. No. 21,925
Int. Cl. F16c 19/04, 19/00
U.S. Cl. 308—8.2 17 Claims



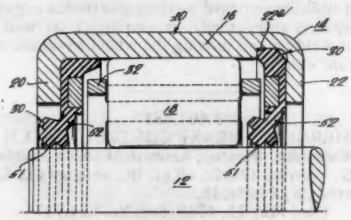
An antiskew device for ensuring proper alignment of roller bearings in roller cutter earth drilling bits is disclosed. The antiskew device aligns the roller bearings as they enter the race area where greatest force is applied to ensure that the force is applied equally along the surface of the roller bearings.

3,601,457

SEAL FOR NEEDLE ROLLER BEARINGS

John F. Helms, Warminster, Pa., assignor to SKF Industries Inc., King of Prussia, Pa.

Filed Aug. 26, 1969, Ser. No. 853,125
Int. Cl. F16c 29/06
U.S. Cl. 308—187.2 4 Claims



A bearing assembly adapted to be mounted on a shaft comprising a cup-shaped housing having a generally cylindrical center portion and a pair of radially inwardly directed flanges at opposite ends of said center portion, means defining a pocket adjacent at least one of said flanges, a plurality of rolling elements mounted interiorly of the housing, a retainer for circumferentially spacing the rollers and a seal adapted to be mounted in the housing at opposite axial ends thereof, said seal comprising a casing made of a resilient material, an annular ringlike reinforcing member mounted in said casing, said casing having an enlarged circumferentially extending bead portion projecting radially outwardly from one outer edge of said reinforcing member, a sealing lip projecting from the inner edge of said reinforcing member, said sealing lip having a reduced neck portion and a terminal edge configuration providing two circumferentially extending sealing lip edges when the sealing lip is deflected in either an outward or an inward direction upon assembly of the bearing to a shaft.

3,601,458

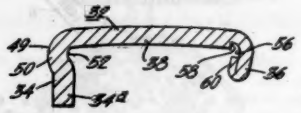
DRAWN CROWNED BEARING SHELL

Ronald J. Farrell, Bremen; Allen Kerns, Valparaiso, and Carl R. Ernsberger, Bremen, all of, Ind., assignors to SRF Industries, Inc., King of Prussia, Pa.

Filed Nov. 3, 1969, Ser. No. 873,452
Int. Cl. F16c 13/00
U.S. Cl. 308—212 5 Claims

A needle roller bearing assembly adapted to be mounted on a shaft member or the like comprising a plurality of

rolling elements, a cage having a plurality of pockets for circumferentially spacing the rolling elements and an outer casing having a circumferentially extending inner raceway, said

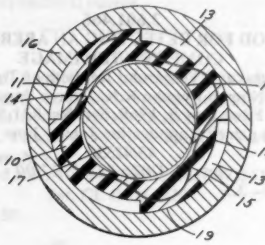


casing including at least one inwardly directed flange at one axial end which is of reduced cross section and folded 180° on itself and disposed at an inwardly directed angle relative to a true radial plane.

3,601,459
SPRING LOADED BEARING

Edward John Cutting, 4 Barton Close, Shepperton, Middlesex, England

Filed June 19, 1969, Ser. No. 834,699
Claims priority, application Great Britain, Aug. 23, 1968, 40313/68
Int. Cl. F16c *27/00*
U.S. Cl. 308—238 **6 Claims**

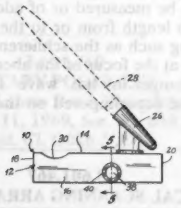


A plastic bearing constructed to support a shaft. The bearing has an irregular inner surface with spaced bearing points engaging the shaft. A spring is embedded in the plastic body of the bearing which exerts a force keeping the bearing surface in engagement with the shaft as the bearing wears.

3,601,460
MULTIPEN AND REFILL HOLDER

Walton C. Marsh, Belleville, Ill., assignor to Marsh Stencil Machine Company, Belleville, Ill.

Filed Feb. 10, 1969, Ser. No. 797,962
Int. Cl. A47f *1/00*
U.S. Cl. 312—73 **6 Claims**

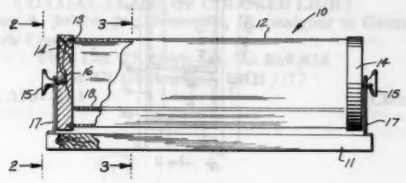


A multipen and selectable refill holder providing support for several refillable pens with different colored inks comprising a closed housing, three pen stands mounted on the housing, end members and a transparent bottom for the housing, an aperture in one end member of a size permitting passage of a pen refill, and a restrictive member in the housing defining a central compartment formed for receiving refills and for dispensing selected refills.

3,601,461
DISPLAY DEVICE

Herman E. Melcher, Rte. 3, Box 268 B, Blanched Road, Waukegan, Ill.

Filed Oct. 20, 1969, Ser. No. 867,461
Int. Cl. A47f *3/10*
U.S. Cl. 312—125 **2 Claims**

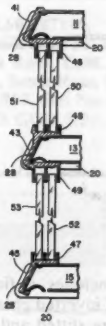


A display case for small handguns, gems, coins and other items. This display is cylindrical in configuration having removable ends, caps, the caps preventing dust from entering the cylinder and brackets secured to a base member supports the cylinder so that it may be rotated by the knobs carried within the end caps on the brackets. The cylinder includes a slideable shelf on its interior. The shelf being slideable when the device is rotated.

3,601,462
CABINET WITH SLIDING DOORS

Jay G. Fenwick, Albert Lea, Minn., assignor to Streater Industries, Inc., Albert Lea, Minn.

Filed Aug. 7, 1969, Ser. No. 848,189
Int. Cl. A47f *3/00*
U.S. Cl. 312—138 **1 Claim**



The invention relates to a sliding door type of cabinet which is constructed in part with the use of standardized shelving apparatus such as hooked shelf brackets and slotted standards or posts. Shelves are provided and adapters for holding and guiding sliding type doors are fitted to the front edge portions of the shelves.

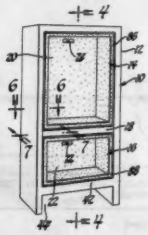
3,601,463
REFRIGERATOR CABINET ENCOMPASSING A RANGE OF REFRIGERATOR VOLUME

Roy E. Watt, Brookville, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed May 22, 1970, Ser. No. 39,719
Int. Cl. A47b *81/00, 77/08, 53/00*
U.S. Cl. 312—214 **3 Claims**

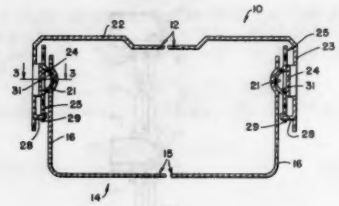
A refrigerator cabinet having foamed insulation secured to the interior walls thereof and capable of slidably receiving plastic liners of various sizes providing a range of food compartment volumes. The foamed insulation has channel members molded therein for receiving and supporting a divider

wall in either horizontal or vertical positions. The plastic liners are formed with a plurality of integral rib members extending from the external surface and terminating in flanges



presenting a flat surface for engagement with the insulation. The length of the integral ribs is varied with the size of the food compartment defined by the plastic liner providing rigid support of the liner in the refrigerator cabinet.

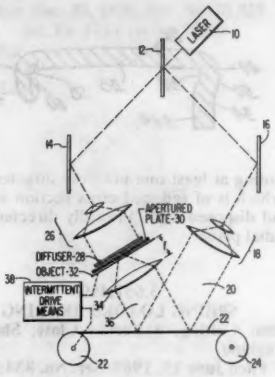
3,601,464
ASH RECEPTACLE FOR AUTOMOBILES
Henry De Boer, Lowell, Mich., assignor to F. L. Jacobs Co., Detroit, Mich.
Filed July 14, 1969, Ser. No. 841,471
Int. Cl. A47b *67/02*; **A47f** *5/08*; **B60n** *3/08*
U.S. Cl. 312—246 **7 Claims**



The receptacle includes a fixed, stamped sheet metal retaining member of inverted channel section, each of whose depending flanges are slitted and inwardly offset to provide integral backing formations for a rigid nonmetallic frictional guide and skid plate. Each plate is fixedly applied by a screw or the like to the inner surface of a retainer flange, in outward abutment with the latter's backing formations. The skid plates are preferably of a thermosetting plastic composition, and each carriers a pair of horizontally aligned, integrally formed skid lugs of quasi-circular convex outline. Such lugs mate slidingly in longitudinal guideway grooves in the sides of the receptacles's ash box.

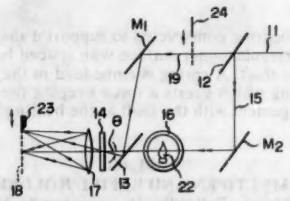
3,601,465
HOLOGRAPHIC STORAGE AND RETRIEVAL OF INFORMATION
William James Hannan, Pennington, N.J., assignor to RCA Corporation
Filed Jan. 23, 1970, Ser. No. 5,237
Int. Cl. G02b *27/22*
U.S. Cl. 350—3.5 **4 Claims**

A single picture is stored as a plurality of holograms, each on a succeeding frame of a storage tape. Each hologram is a recording of the information present in a different small area of the picture. During readout, the tape may be driven continuously relative to the readout beam and the reconstructed image thereupon made to appear as a scanned picture. The



reconstruction may be made to occur on a stationary storage medium having storage properties such as a film or a scannable electronic storage means.

3,601,466
METHOD FOR DETECTING AN ABERRATION-COMPENSATED IMAGE
Tadao Tsuruta, and Yoshinobu Ito, both of Tokyo, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan
Filed June 9, 1969, Ser. No. 831,561
Claims priority, application Japan, June 21, 1968, 43/42530
Int. Cl. G02b *27/38, 27/00*
U.S. Cl. 350—3.5 **3 Claims**

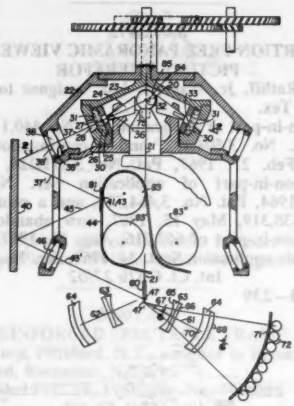


This invention relates to a method for sharply detecting an image which comprises, preparing a hologram with an aberration-free wave front and an aberration wave front, illuminating the hologram with a wave front produced as a result of removing only the change in light path length caused by a phenomenon to be measured or of adding newly the change in the light path length from or to the aberration front, and effecting filtering such as the schlieren method or phase difference method at the focus of the aberration-free wave front against the change in the wave front caused by the phenomenon and superimposed on the aberration-free wave front.

3,601,467
OPTICAL SCANNING ARRANGEMENT
Ernest Wildhaber, 124 Summit Drive, Rochester, N.Y.
Continuation-in-part of application Ser. No. 804,080, Mar. 4, 1969, now abandoned. This application Apr. 1, 1969, Ser. No. 820,695
Int. Cl. G02b *17/00*
U.S. Cl. 350—6 **11 Claims**

The entire area of a single character is simultaneously illuminated, and the illuminated area is displaced along a scanning line that contains further characters. Images are formed adjacent a common point of the strung out charac-

ters. The characters are preferably made up of two elements of a limited number of elements. The rays of the images of the two character elements formed adjacent said common



point are guided in different directions. They are compared simultaneously with all elements in use.

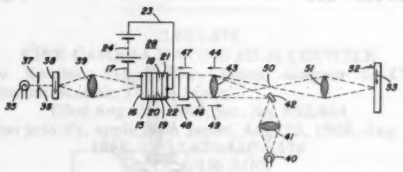
A straight scanning line may be attained with a concave and preferably cylindrical mirror.

3,601,468

OPTICAL LIGHT WAVE MODULATOR FOR REPRESENTING A FIRST COLOR LIGHT WAVE AS A SECOND COLOR LIGHT WAVE

John L. Dailey, Pittsford, N.Y., assignor to Zerox Corporation, Rochester, N.Y.

Filed Nov. 17, 1969, Ser. No. 877,241
Int. Cl. G02f *1/26*
U.S. Cl. 350—150 **1 Claim**



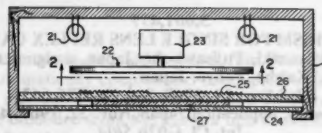
A photoconductor light wave modulator embodying a photoconductor and a crystal of potassium dihydrogen phosphate, and activated by a first color light wave of varying intensity and a second color light wave of fixed intensity to represent the first color light waves of varying intensity in terms of the second light wave of corresponding varying intensity.

3,601,469

ROTARY POLARIZER

Anthony Siksai, 2705 Lahser Road, Bloomfield Hill, Mich.

Filed Aug. 11, 1969, Ser. No. 848,817
Int. Cl. G02b *5/30*
U.S. Cl. 350—153 **16 Claims**



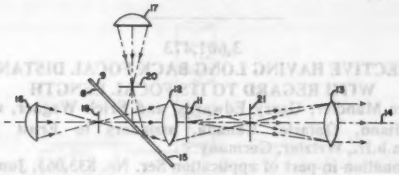
A rotary polarizer for use with animated display devices, wherein only a percentage of the polarizer is polarized. Therefore, part of the light passing through the polarizer is polarized and the remaining portion passes through without being polarizing. When used in an animated display device, such a polarizer produces a smooth less pulsating motion and a brighter more vivid display.

3,601,470

LIGHT VALVE PROJECTION SYSTEM EMPLOYING COAXIAL BEAMS OF COLORED LIGHT

Lawrence A. Juhlin, Jr., Greenville, Ill., assignor to General Electric Company

Filed Oct. 27, 1969, Ser. No. 869,824
Int. Cl. G02b *27/38*; **G02f** *1/32*
U.S. Cl. 350—161 **4 Claims**



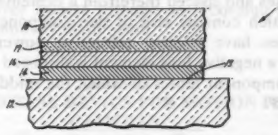
In a system for projecting images in color produced by light passing through optical diffraction gratings formed in a deformable medium, gratings formed along each of two different directions are illuminated with light of two different colors. By deployment of dichroic mirrors in the light path, light of both colors are superimposed and directed coaxially along an optic axis of the system onto the deformable medium, thereby achieving an improvement in quality of the projected image.

3,601,471

DURABLE FIRST SURFACE SILVER HIGH REFLECTOR

Richard Ian Seddon, Santa Rosa, Calif., assignor to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Filed Mar. 3, 1969, Ser. No. 803,918
Int. Cl. G02b *5/28*
U.S. Cl. 350—166 **14 Claims**



Durable first surface silver reflector having a layer of silver which is undercoated and overcoated in such a manner as to give the layer excellent adhesion to the substrate and which is also provided with a multilayer dielectric coating to give the coating an ability to withstand high humidity salt spray and the like.

3,601,472

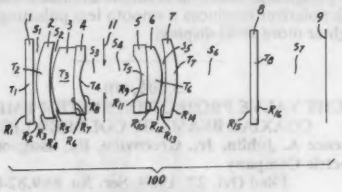
OBJECTIVE LENS

David C. Gilkeson, White Bear Lake, Minn., and Michael J. Buzawa, Rochester, N.Y., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 20, 1969, Ser. No. 826,216
Int. Cl. G02b *9/36*, *9/62*
U.S. Cl. 350—196 **4 Claims**

A microfilm camera/processor having a constant film plane to copy board distance and a plurality of objective lens systems mounted in a precision turret for alternative utilization to vary the magnification or reduction of the

camera/processor. Each lens system includes an eight element microphotographic objective lens for providing alternative magnification, depending upon the system selected, in a fixed copy board to film distance of 82 inches.



3,601,473

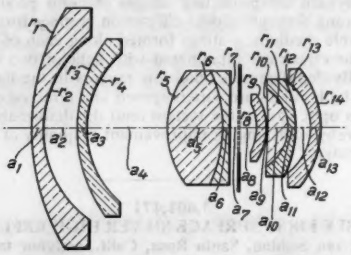
OBJECTIVE HAVING LONG BACK FOCAL DISTANCE WITH REGARD TO ITS FOCAL LENGTH

Walter Mandler; Garry Edwards, and Erich Wagner, all of Midland, Ontario, Canada, assignors to Ernst Leitz G.m.b.H., Wetzlar, Germany

Continuation-in-part of application Ser. No. 833,063, June 13, 1969. This application Apr. 14, 1970, Ser. No. 28,339

Int. Cl. G02b *9/62*

U.S. Cl. 350—215 **1 Claim**



A photographic objective having a relatively long back focal distance with regard to its focal length and also having a great relative opening. The objective comprises in front of the diaphragm a negative lens element consisting of two component lenses and spaced therefrom a cemented positive lens element which consists also of two component lenses. The latter lenses have inverse refractive power. Behind the diaphragm a negative lens element is disposed which consists of three component lenses of which the middle one is a cemented lens.

3,601,474

TRIPLET OBJECTIVE

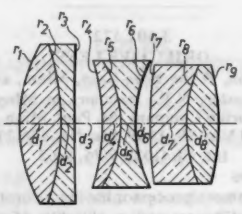
Georg Knetsch, Berghausen, Germany, assignor to Ernst Leitz GmbH, Wetzlar, Germany

Filed July 13, 1970, Ser. No. 54,472

Claims priority, application Germany, July 19, 1969, P 19 36 895.7

Int. Cl. G02b *9/14*

U.S. Cl. 350—227 **1 Claim**



An objective specially designed for a field angle of approximately 30° and having a large relative opening of at least f:2.8 comprises three separate lens elements, each of which being assembled from two single lenses of opposite refractive power which are cemented together.

3,601,475

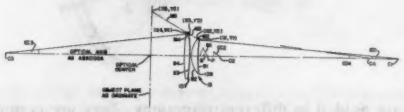
DISTORTION-FREE PANORAMIC VIEWER AND PICTURE THEREFOR

Harvey L. Ratliff, Jr, Waldorf, Md., assignor to Jetru Inc., Amarillo, Tex.

Continuation-in-part of application Ser. No. 440,110, Mar. 16, 1965, Pat. No. 3,504,122, and a continuation-in-part of 618,977, Feb. 27, 1967, Pat. No. 3,471,224, which is a continuation-in-part of application Ser. No. 343,841, Feb. 10, 1964, Pat. No. 3,464,570, and a continuation-in-part of 638,319, May 15, 1967, now abandoned, and a continuation-in-part of 662,716, Aug. 23, 1967, now abandoned. This application Sept. 24, 1969, Ser. No. 860,489

Int. Cl. G02b *27/02*

U.S. Cl. 350—239 **4 Claims**



A panoramic viewer having a large slot in the front portion thereof and a special wide-angle ocular in the rear portion thereof for eliminating the distortion of a fisheye-type picture placed in the slot to enable substantially distortion-free wide-angle viewing.

3,601,476

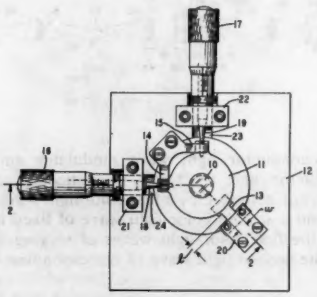
ADJUSTABLE OPTICAL DEVICE

Donald R. Mackenzie, Plainfield, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Sept. 16, 1968, Ser. No. 762,184

Int. Cl. G02f *1/34*

U.S. Cl. 350—285 **1 Claim**



An adjustable holder for optical elements, for use with lasers, exhibits excellent mechanical stability, which is achieved by employment of a beam bent within its elastic limit, to support the optical element. Orientation of the element is then achieved by introducing torsion into the beam, as well as by varying the amount of bending.

3,601,477

PENTAPRISM FOR SINGLE LENS REFLEX CAMERA

Masayuki Miyazaki, Fujisawa-shi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 14, 1968, Ser. No. 775,643

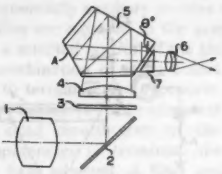
Claims priority, application Japan, Nov. 22, 1967, 42/74668

Int. Cl. G02b *5/04*

U.S. Cl. 350—286 **3 Claims**

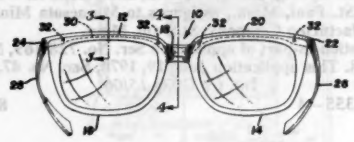
This invention relates to a pentaprism incorporated in single lens reflex cameras which is so constructed that the final

surface, in other words the transparent surface on the eyepiece side, of the prism is slanted to make a specified



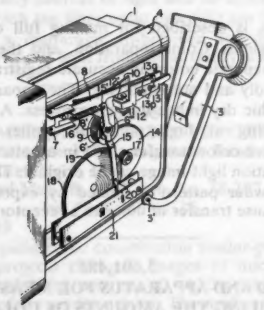
angle with the optical axis of the finder in order to eliminate the disturbing reflection of light within the finger.

3,601,478
REINFORCED SPECTACLE FRAME
Robert H. Ramp, Pittsford, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Feb. 10, 1969, Ser. No. 797,984
Int. Cl. G02c *1/00*
U.S. Cl. 351—89 **1 Claim**



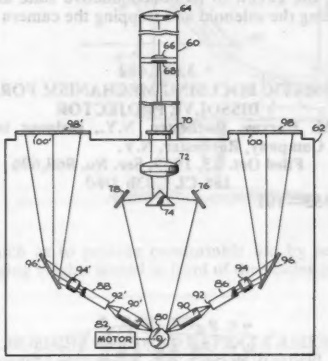
A spectacle frame having a brow bar is provided with a recess into which a reinforcing member is secured. The spectacles are further characterized in that by partially exposing the reinforcing member a decorative effect is also achieved.

3,601,479
CINE CAMERA HAVING FILM COUNTER
Yoshio Komine, Saitama-ken, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 21, 1969, Ser. No. 852,044
Claims priority, application Japan, Aug. 28, 1968, Aug. 30, 1968, 43/73,679;43/74,476
Int. Cl. G03b *23/02*
U.S. Cl. 352—72 **7 Claims**



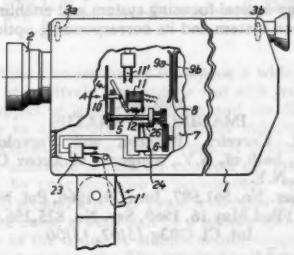
A cine camera is provided with a film footage counter which is automatically coupled and uncoupled with the film-advancing mechanism of the camera as a film magazine is loaded and unloaded from the camera film chamber. A film-driving shaft with its axis normal to the direction of loading and unloading operations and extending into the camera film chamber, is mounted within the camera on a biased pivoted member, the insertion or withdrawal of the film magazine retracting the film-winding shaft; the biased member coupling the shaft to the magazine driving core when the film magazine is in place. A film footage indicator operative with the film-driving shaft is provided with resilient means for returning the indicator to a zero reading position upon retraction of the film-winding shaft from the camera body.

3,601,480
OPTICAL TUNNEL HIGH-SPEED CAMERA SYSTEM
Donald Sexton Randall, Mountain View, Calif., assignor to Physics International Company, San Leandro, Calif.
Filed July 10, 1968, Ser. No. 743,868
Int. Cl. G03b *41/00*
U.S. Cl. 352—84 **8 Claims**



A high-speed framing camera is disclosed. The camera includes an optical tunnel of rectangular cross section for forming an extended array of virtual images of an event to be recorded. An objective lens system of limited aperture projects a cone of image-forming rays onto a face of a rotating mirror upon which face a real image of the event is formed. These rays are recollected by another lens to form an additional real image at the entrance of the tunnel. A copy lens at the exit of the tunnel forms rows of real images of these virtual images on an image surface outside of the tunnel. As the face of the mirror rotates through its recording angle, the images are sequentially illuminated.

3,601,481
SHUTTER RELEASE DEVICE FOR MOTION PICTURE CAMERAS
Arthur Kessler, Grossaltenstadten, Germany, assignor to Ernst Leitz Gmbh, Wetzlar, Germany
Filed Dec. 19, 1969, Ser. No. 886,674
Claims priority, application Germany, Dec. 23, 1969, P 18 16 600.2
Int. Cl. G03b *21/58*
U.S. Cl. 352—169 **5 Claims**



A shutter release device in an electrically operated motion picture camera for releasing the shutter for continuous

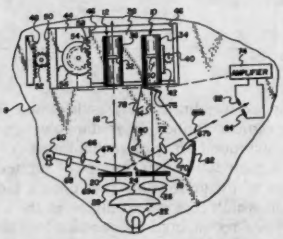
operation or for single frame exposure. The rotating camera shutter is stopped and released by a stop member actuated by a solenoid. A bistable circuit for energizing the solenoid and the camera motor is connected in line with the camera release switch and is switched in its conductive state when the release switch is closed. Means for generating one electric pulse in dependence on every shutter rotation and for conducting the pulse to the bistable circuit are provided, which pulse causes the bistable circuit to be switched in its nonconductive state, thereby deenergizing the solenoid and the camera motor. Set means are provided at the camera which may be set either to a continuous-operation-position or to a single-frame-exposure-position. In the continuous-operation-position the set means prevent the pulse from reaching the bistable circuit while in the single-frame-exposure position the pulse is conducted to the bistable circuit, switching the circuit to its nonconductive state and thereby deenergizing the solenoid and stopping the camera motor.

3,601,482

AUTOMATIC FOCUSING MECHANISM FOR A LAP DISSOLVE PROJECTOR

Donald M. Harvey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 23, 1969, Ser. No. 868,696
Int. Cl. G03b *3/10*
U.S. Cl. 353—101 **10 Claims**



A lap dissolve projector having mechanism for automatically focusing film images in a pair of film projection lens systems for maintaining a constant lens-to-film distance for each system in which the film image is in focus. An optical focusing system for each film comprises a lens for focusing a radiation source on the corresponding film, and a lens for focusing the reflected radiation from the film onto a single pair of closely spaced radiation sensitive elements. The output of the radiation sensitive elements is supplied to a drive motor for adjusting the lens-to-film distance to maintain image focus. A disabling member for the optical focusing systems is selectively movable between two positions for alternately disabling one of the film projection systems and its corresponding optical focusing system and enabling the other film projection system and its corresponding optical focusing system.

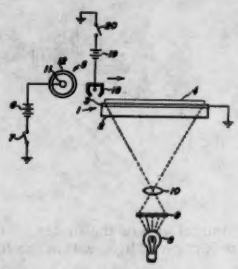
3,601,483

IMAGING APPARATUS

Leonard M. Carreira, Penfield, and Vsevolod Tulagin, Rochester, both of, N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 561,587, June 29, 1966, Pat. No. 3,477,934
Filed May 16, 1969, Ser. No. 825,256
Int. Cl. G03g *15/02, 15/00*
U.S. Cl. 355—3 **8 Claims**

Imaging apparatus for making photoelectrophoretic images by placing a photoelectrophoretic suspension between two or more electrodes while exposing the suspension to activating electromagnetic radiation and an electric field. An electric field may be generated electrostatically either before or during imaging in any manner such as by a corona discharge device or by frictionally rubbing the surface of one of the electrodes.

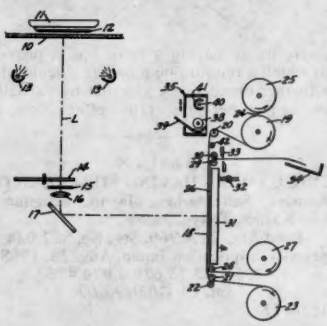


3,601,484

COLOR COPYING APPARATUS

Douglas H. Dybvig; John W. Ulseth, and Joseph A. Wiese, Jr., all of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of application Ser. No. 728,169, May 10, 1968. This application June 19, 1970, Ser. No. 47,720
Int. Cl. G03g *15/00*
U.S. Cl. 355—4 **8 Claims**



Apparatus is described for making full color copies of colored originals. Color separation, and thermally induced printing of separate colors in accurate registration, is accomplished rapidly and automatically. The apparatus employs a thermographic dry image-forming process. A powder supply unit operating at high potential applies powder to a photosensitive color transfer sheet in a pattern defined by a color separation light-image of the original. The radiation-absorptive powder pattern is heated by exposure to radiant energy to cause transfer of color to a receptor sheet.

3,601,485

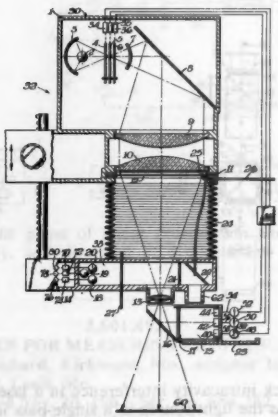
METHOD AND APPARATUS FOR MEASURING AND CONTROLLING THE AMOUNTS OF COLORED LIGHT IN THE PRINTING OF PHOTOGRAPHIC TRANSPARENCIES

Siegfried Barbieri, Brixen, near Bozen, Italy, assignor to Durst A.G., Bozen, Italy

Filed Feb. 12, 1969, Ser. No. 798,621
Claims priority, application Italy, Oct. 9, 1968, 2572
Int. Cl. G03b *27/76*
U.S. Cl. 355—38 **20 Claims**

An apparatus for making prints from colored photographic transparencies performs color measuring and printing either

simultaneously or sequentially. In simultaneous operation, part of the light passing through the transparency is utilized to terminate the exposures to the printing light of each of the primary colors. Sequentially auxiliary sources of light of each of the primary colors are adjusted to the same combination and intensity as in a selected portion of the transparency having an arbitrary combination of these colors. The adjusted light is then used to terminate the exposures to the light of each of the primary colors. A semitransparent mirror upon a movable sensing head diverts part of the light passing through the transparencies to terminate the exposures or uses, therefor the light adjusted. A fiber optic samples the



combination of colors in a selected portion of the transparency during sequential measuring and projects them upon the sensing head. The auxiliary sources are then adjusted to the same combination and intensity as the selected portion of the transparency and this light is projected upon the sensing head during the sequential printing process to terminate the exposures to each of the primary colors. The sensing head slides back and forth under the focusing lens carrier within which the auxiliary sources of light and an apertured reflector (through which the fiber optic extends) are conveniently mounted with a diaphragm in-between for adjusting the overall intensity of the light from the auxiliary sources.

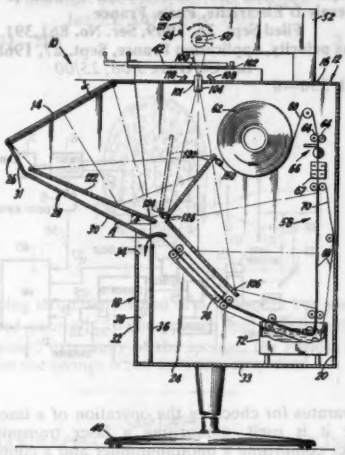
3,601,486

COMBINATION READER-PRINTER

Mark Levine, Plainview, N.Y., assignor to Readex Microprint Corporation, New York, N.Y.

Filed May 18, 1970, Ser. No. 38,207
Int. Cl. G03b *13/28*
U.S. Cl. 355—45 **5 Claims**

A compact epidiascopic combination reader-printer is disclosed which projects enlarged images of microforms for viewing or printing by persons of widely ranging heights seated in front of the reader-printer. The reader-printer housing includes a cantilevered portion projecting forwardly supporting a rear projection viewing screen. The housing has an upper surface on which is mounted a microform holder and transport means, and means for transmitting light through transparent microforms. Lighting means are also mounted below the microform holder to illuminate opaque microforms. A printing station is mounted within the housing and adjacent the rear wall of the housing and an optical system within the housing provides an enlarged image. A system including movable and stationary mirrors transmits an enlarged image to either the printing station or the viewing screen. The housing shape and location of the various elements which necessarily are manipulated or observed by a



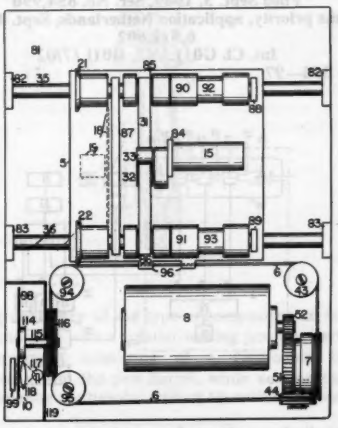
user are such as to provide comfortable use by persons of widely ranging heights seated in front of the reader-printer.

3,601,487

MICROFICHE STEP AND REPEAT CAMERA

John S. Burton, Los Angeles, and Harry F. Rayfield, Bradbury, both of, Calif., assignors to Terminal Data Corporation, Van Nuys, Calif.

Filed Feb. 26, 1970, Ser. No. 14,422
Int. Cl. G03b *27/42*
U.S. Cl. 355—53 **14 Claims**

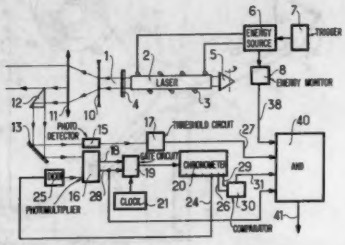


A microfiche camera suited to expose a wide selection of film widths at relatively high speeds and with required precision. The objective lens is stationary and the film is moved transversely to accomplish the multiple independent exposures characteristic of the fiche format. A photoelectric cell-format disk assembly accurately controls the lateral position of the film by coaction with a servomotor. A mechanical cable wound around a power drum translates a film-carrying carriage. The cable is kept taut by a torsion spring surrounding the hub of the drum. A stepper-motor supported by the film carriage translates the film longitudinally. A pinch roller system having spring flanges at the edges maintains precise transverse alignment at the lens aperture gate despite intervening transverse motion of the film.

3,601,488
APPARATUS FOR CHECKING THE PROPER OPERATION OF A LASER TELEMETER

Guy Ripart, Plessis-Robinson, France, assignor to Compagnie Generale D'Electricite, Paris, France

Filed Sept. 26, 1969, Ser. No. 861,391
Claims priority, application France, Sept. 27, 1968, 168,042
Int. Cl. G01c *3/08, 25/00*
U.S. Cl. 356—6 7 Claims

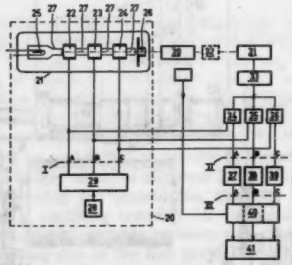


Apparatus for checking the operation of a laser telemeter before it is used, comprising a laser transmitter and a receiver comprising a photomultiplier and a counter characterized particularly by its means for measuring the energy supplied to the discharge circuit connected to the laser and for measuring the laser emission energy, as well as its means for generating an artificial echo signal on an artificial target in order to stop the chronometer in a preselected position corresponding to the distance separating the artificial target from the receiver and its means for stopping the counter before its maximum capacity has been exceeded.

3,601,489
GAS-DISCHARGE LAMP FOR PRODUCING MODULATED ATOMIC RESONANCE RADIATION

Zeger Van Gelder, Emmasingel, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 3, 1969, Ser. No. 854,990
Claims priority, application Netherlands, Sept. 4, 1968, 6,812,602
Int. Cl. G01j *3/42;* H01j *17/02*
U.S. Cl. 356—97 7 Claims

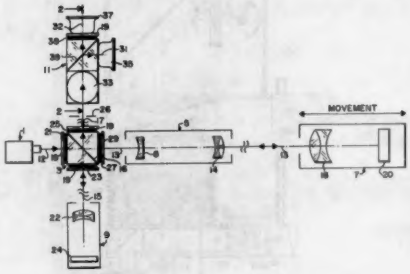


A gas-discharge lamp for producing modulated atomic resonance radiation comprising a hermetically sealed cylindrical envelope having a window at one end, two electrodes between which a positive column discharge in a rare gas is maintained during operation by means of a direct-voltage difference, a sputtering electrode essentially consisting of an element having desired resonance radiation characteristics, and a ring to confine the resonance radiation along the axis of the positive column discharge which is located in such a manner that it intersects the window. The sputtering electrode and the ring surround the positive column with the ring positioned between the sputtering electrode and the electrode at the window end. The ring, extending up to the vicinity of the sputtering electrode, has an inner diameter which is smaller than that of the sputtering electrode and a length which is at least equal to the inner diameter. Furthermore, a generator is provided from which a voltage of periodically varying values is applied to the sputtering electrode. The lamp may comprise a plurality of sputtering electrodes and may be used in apparatus for measuring absorption of atomic resonance radiation, particularly for determining traces of elements in a sample.

3,601,490
LASER INTERFEROMETER

Kent E. Erickson, Ridgewood, N.J., assignor to Keuffel & Esser Company, Hoboken, N.J.

Filed Dec. 30, 1966, Ser. No. 606,364
Int. Cl. G01b *9/02*
U.S. Cl. 356—106 10 Claims



Feedback intracavity interference in a laser beam generator used as the light source in a single-pass interferometer is avoided by dividing the source beam at a polarizing beamsplitter to form reference and measuring beams polarized with antiparallel Poincare vectors. Birefringent elements disposed in the path of the polarized beams effectively rotate the vectors of the beams and create respectively contrapolarity in the beams. As a result the beamsplitter originally passing (or reflecting) the beams will subsequently reflect (or pass) the beams, thus preventing the return of laser beams to the generator cavity. The reference and measuring beams recombined at the beamsplitter thus form a composite beam having a resultant Poincare vector lying in a plane normal to the antiparallel Poincare vectors of the component beams. As the azimuth of the resultant vector traverses a full cycle with the phase change resulting from the movement of the interferometer measuring component, a plurality of polarizing elements disposed in the combined beam create optically discernible fringe signals which minimize at selected azimuths in the vector cycle. Multiple signal-counting components provide multiple-phase electronic signals which may be differentiated to remove DC components and provide signals which may be employed in reversible readout devices.

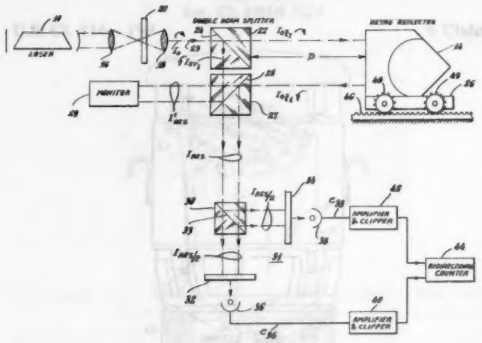
3,601,491
DISTANCE-MEASURING INTERFEROMETER

William Reid, Smith-Vaniz, 14 Pasture Lane, Darien, Conn.

Continuation-in-part of Ser. No. 566,050, July 18, 1966, abandoned
Filed June 7, 1967, Ser. No. 645,567
Int. Cl. G01b *9/02*
U.S. Cl. 356—106 4 Claims

An interferometer for accurately measuring the displacement of a remotely positioned object includes means for projecting a first polarized beam of light at the object, for reflecting the projected beam from the object and for combining a reference beam of light with the reflected beam. The reference beam is of similar polarization and is orthogonally related to the first beam. Means are provided for converting the resultant beam to linearly polarized light and for detect-

ing and indicating variations in the polarization plane of linearly polarized light. Displacement of the object causes



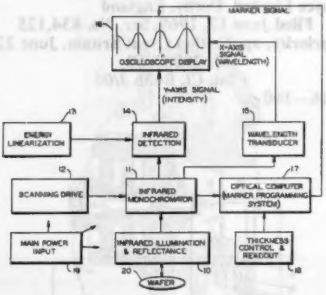
variations in the plane of linear polarization and the magnitude, velocity, and direction of displacement are sensed and indicated.

3,601,492

APPARATUS FOR MEASURING FILM THICKNESS

Thomas E. Reichard, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 20, 1967, Ser. No. 684,382
Int. Cl. G01b *9/02*
U.S. Cl. 356—108 **6 Claims**



Improved means and method for measuring film thickness by rapidly forming and portraying optical interference fringe spectra and interpreting the same directly in terms of film thickness. An internal computer senses movement of a wavelength reference member and causes programmed indices to be displayed along with the interference fringe waveform. A single manual control, with the aid of an improved scanning and display method which balances out time lags, allows the indices to be coordinated with the fringe waveform. An automatic thickness readout device cooperates with the manual control.

3,601,493

CLEANSING STRUCTURE AND SOAP DISH

Jacob M. Levy, 5238 Oakton, Skokie, Ill.

Filed Apr. 16, 1969, Ser. No. 816,542
Int. Cl. A47k *5/04, 7/03*
U.S. Cl. 401—201 **2 Claims**

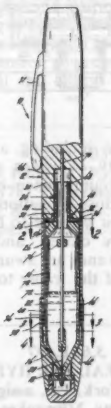
A cleansing structure formed of a sponge, a bar soap held and exposed centrally in the sponge and a relatively rigid handle exposed externally of the sponge, the handle serving as a base for the sponge when used as a soap dish.

3,601,494

STYLOGRAPHIC PEN WITH DISPOSABLE INK RESERVOIR

Edward Bok, 7348 Lee Hwy. Apt. #201, Falls Church, Va.

Filed Feb. 6, 1970, Ser. No. 9,369
Int. Cl. B43k *1/10*
U.S. Cl. 401—258 **12 Claims**



A stylographic pen of the type encompassing an ink reservoir communicant with a tubular writing pen tip, particularly the improvement consisting of a disposable reservoir reciprocable within the pen barrel, while venting the reservoir and cleaning the tubular writing tip with a cleaning wire.

3,601,495

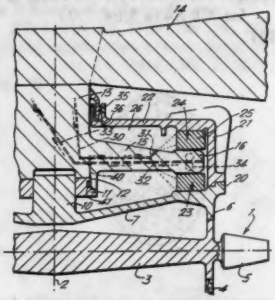
BEARING ASSEMBLY

Cyril John Bean, Coventry, England, assignor to Rolls-Royce Limited, Darby, England

Filed Sept. 16, 1969, Ser. No. 858,308
Claims priority, application Great Britain, Sept. 20, 1968, 44950/68
Int. Cl. F01d *11/00*
U.S. Cl. 415—110 **12 Claims**

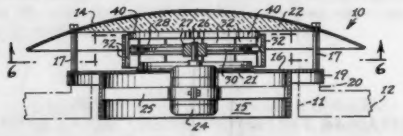
A bearing assembly comprising an annular rotor portion, a stator portion about which the rotor portion is mounted for rotation about a stator portion and which defines a substantially closed annular chamber therewith, the stator portion including a stator member which extends transverse to the

axis of rotation of the rotor portion and which carries at least one thrust bearing which engages an internal surface of the



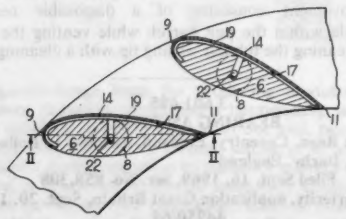
rotor portion. The bearing assembly is for use in a substantially vertically arranged gas turbine engine.

3,601,496
ROOF BLOWER DEVICE
Bobbie G. Kemp, 113 Cumberland Shore Drive, Hendersonville, Tenn.
Filed Aug. 27, 1969, Ser. No. 853,275
Int. Cl. F01d *17/00*; **F04d** *25/08*
U.S. Cl. 415—146 **7 Claims**



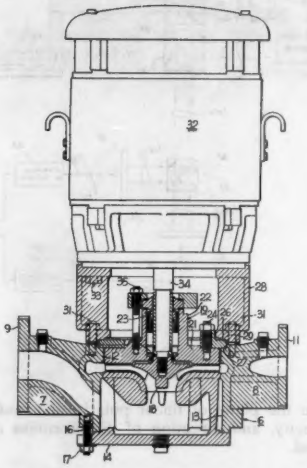
A roof blower device including a power-driven rotary frame having a plurality of vanes pivotally and serially mounted around the circumference of the frame in overlapping relationship in closed position. The rotary frame is mounted in an annular air passage so that when the frame is stationary the vanes are closed, and when the frame is rotated the overlapping vanes are swung radially outward by the centrifugal motion of the frame to open the annular air passage.

3,601,497
WICKET GATE END SEAL FOR HYDRAULIC MACHINE
Howard A. Mayo, Jr., York, Pa., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Oct. 24, 1969, Ser. No. 869,038
Int. Cl. F01d *17/12*
U.S. Cl. 415—163 **1 Claim**



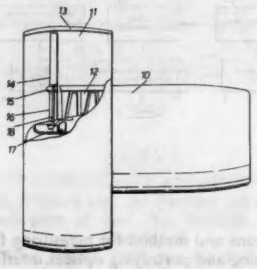
A piston seal is slidably contained in a slot provided in the ends of the wicket gates. Means are provided to urge this piston seal into liquid sealing engagement with the adjacent hydraulic turbine stationary components. These means are preferably in the form of pressurized hydraulic fluid directed to the chamber behind the piston seal.

3,601,498
CENTRIFUGAL PUMP
Earle E. Schroeder, New Richmond, Ohio, assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Oct. 23, 1969, Ser. No. 868,729
Int. Cl. F04d *29/00*; **F04b** *17/00*
U.S. Cl. 415—170 **1 Claim**



A centrifugal pump having front and rear apertures each of a size to permit removal of the impeller and the shaft seal therethrough. The rear cover assembly provides a support for the shaft seal housing and can be removed through either aperture.

3,601,499
GEAR DRIVE FOR VARIABLE PITCH AEROFOIL ASSEMBLY
John H. Ellinger, Mickleover, Derby, England, assignor to Rolls Royce Limited, Derby, England
Filed June 17, 1969, Ser. No. 834,125
Claims priority, application Great Britain, June 22, 1968, 29883/68
Int. Cl. B63h *3/06*
U.S. Cl. 416—160 **6 Claims**



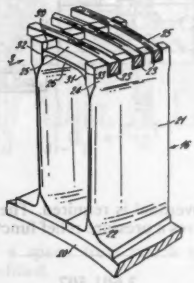
A gear drive for variable pitch aerofoil comprises a common gear wheel adapted to drive the aerofoils to vary their pitch, a plurality of compound epicyclic wheels engaging with the common wheel and the drive shaft of the aerofoil, a carrier from which are carried the epicyclic wheel and drive means for the carrier adapted in one mode to hold the carrier stationary and in another mode to cause the carrier to rotate with the drive shaft.

3,601,500

ROTOR ASSEMBLY FOR A FLUID FLOW MACHINE

Jack Palfreyman, and Henry Edward Middleton, both of Derby, England, assignors to Rolls-Royce Limited, Derby, England

Filed Aug. 12, 1969, Ser. No. 849,437
Claims priority, application Great Britain, Aug. 28, 1968, 41,097/68
Int. Cl. F01d 5/24
U.S. Cl. 416—190 6 Claims



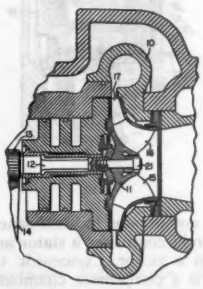
A rotor assembly for a fluid flow machine comprising a rotor hub member provided with a plurality of angularly spaced apart rotor blades, and at least one load-distributing member which transmits predetermined torsional loads between the various rotor blades, the load-distributing member being free to move with respect to all the rotor blades but engaging the latter to distribute the load whenever any rotor blade, as a result of the application thereto of such a predetermined torsional load, moves with respect to the remaining rotor blades.

3,601,501

GAS COMPRESSOR IMPELLER AND SHAFT ASSEMBLY

John G. Johnson, Rte. 2, Box 18, Waynesboro, Va., and James H. Anderson, 1615 Hillock Lane, York, Pa.

Filed Feb. 26, 1970, Ser. No. 14,470
Int. Cl. F04d 29/00; B63b 1/00; F16d 1/06
U.S. Cl. 416—244 6 Claims



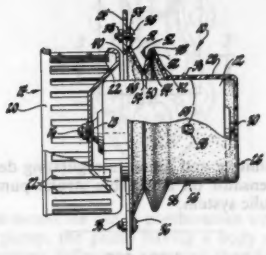
A centrifugal gas compressor impeller is assembled to a rotatable shaft with two friction washers having conical surfaces mating with respective opposite conical surfaces of the impeller that are concentric to a central impeller aperture through which a threaded bolt is passed and threaded into a threaded aperture at the end of the rotatable shaft. The angles of concentricity for the conical surfaces of the washer are slightly different than the angles of concentricity of the mating impeller surfaces so that a friction lock is obtained between the shaft and impeller and also the impeller and washer apertures are slightly larger than the bolt shaft diameter so that an impeller centering relative to the shaft is assured during assembly.

3,601,502

VIBRATION ISOLATION BLOWER MOUNTING

Robert M. Harter, Collins, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 17, 1969, Ser. No. 858,699
Int. Cl. B64c 11/00
U.S. Cl. 416—244 4 Claims



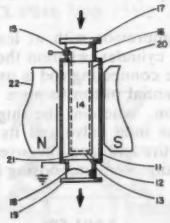
In preferred form a blower assembly for an automobile ventilation system including a blower motor, a blower fan connected to the motor for rotation, a resilient plastic member having a tubular end portion encircling and supporting the fan and a bellows portion connected at one end to the tubular end portion and attached at the other end to a wall of the automobile. Expansion and contraction of the bellows portion dampens axial and lateral vibrational movement of the blower motor.

3,601,503

THIN MEMBRANE IONIZATION PUMP APPARATUS

Thomas W. Snouse, 13781 Pierce Road, Saratoga, Calif.

Filed Aug. 8, 1969, Ser. No. 849,607
Int. Cl. F04b 37/02
U.S. Cl. 417—48 3 Claims

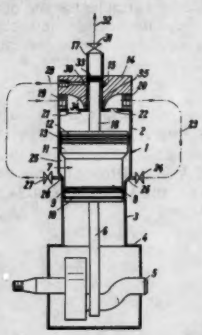


An ionization process vacuum pump. Ions produced in the pump are accelerated to energies sufficiently high to enable them to pass through a thin membrane and thus out of the system being evacuated. The membrane prevents return of low energy gas molecules from the high-pressure side of the pump. Embodiments relating to different methods for production of energetic ions are discussed.

3,601,504
COMPENSATOR AND PRESSURE LIMITING DEVICE
James R. McBurnett, Stillwater, Okla., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Sept. 22, 1969, Ser. No. 859,806
Int. Cl. F04b 49/00
U.S. Cl. 417—213 6 Claims

A pressure limiting and pressure regulating device operating as a compensator on a variable stroke pump in a load sensitive hydraulic system.

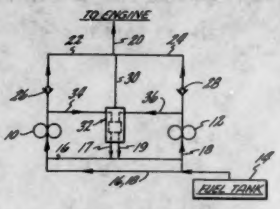
3,601,505
COMPRESSORS
Kurt Bratsch, Kampchaussee 39d, 2050 Hamburg 80, Germany
Filed Apr. 8, 1969, Ser. No. 814,389
Claims priority, application Germany, Apr. 8, 1968, Mar. 4, 1969, P 17 03 145.7;P 19 10 848.6
Int. Cl. F04b 3/00
U.S. Cl. 417—266 12 Claims



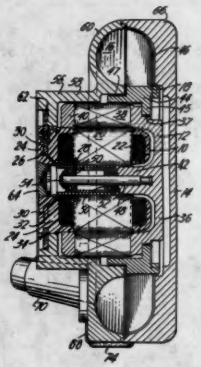
An improved compressor with at least three stages and having at least one cylinder, wherein the improvement comprises that only one connecting rod is used for each cylinder and that the differential piston forms a guide piston for the high-pressure piston, wherein the high-pressure cylinder operates without an inlet valve and its outlet valve covers substantially the entire and face; the invention also comprises a multicylinder arrangement embodying these improvements.

3,601,506
WEAR EQUALIZED FUEL DELIVERY SYSTEM
Ray Frederick Griswold, Northridge, Calif., assignor to Chandler Evans Inc., West Hartford, Conn.
Filed Nov. 28, 1969, Ser. No. 880,648
Int. Cl. F04b 49/00, 23/04, 41/06
U.S. Cl. 417—286 9 Claims

A multipump fluid delivery system that simultaneously provides pump redundancy and the large displacement necessary at low startup speeds. Valve means are provided to cause one or more pumps to recirculate unpressurized fuel during normal operation when the entire flow of the several pumps need not be pressurized to meet system demands. The valve means automatically alternates the loaded pump each successive startup. This alternate loading tends to equalize wear among the several pumps, thereby affording a longer life before fuel system overhaul is required. The valve means also simultaneously serves a pressure relief function.



3,601,507
COMPACT FLUID COMPRESSOR
Dwight E. Harris, Woodstock, N.Y., assignor to Rotron Incorporated, Woodstock, N.Y.
Filed Aug. 27, 1969, Ser. No. 853,298
Int. Cl. F04b 17/00; H02k 7/00
U.S. Cl. 417—354 7 Claims

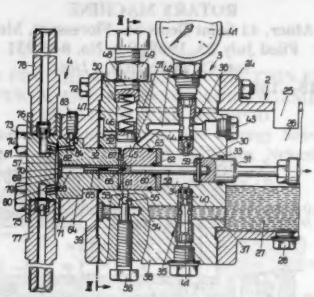


A regenerative compressor in accordance with the invention described herein comprises a stator and a rotor coaxial therewith to form a motor. Concentric to the motor and between its ends is a compressor chamber having inlet and exhaust openings. A compressor wheel is mounted on the rotor and projects into the compressor chamber for providing a high compression output in a limited space.

3,601,508
PROCESS AND DEVICE FOR OPERATING DIAPHRAGM METERING PUMPS
Franz Orlita, Schillerstrasse 33, D-63 Giessen, Lahn, Germany
Filed Apr. 25, 1969, Ser. No. 819,374
Claims priority, application Germany, Apr. 25, 1968, P 17 03 269.8
Int. Cl. F04b 9/08
U.S. Cl. 417—388 3 Claims

Process and device for operating a diaphragm metering pump in which a charging pump is connected to a metering

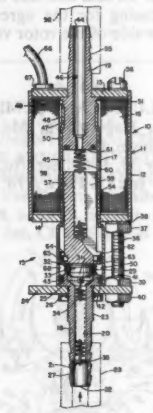
pump with a supply space for the transmitting liquid which is under atmospheric pressure and the pressure side is in communication with a space from which the pressure transmitting space is refilled.



3,601,509
ELECTROMAGNETIC PUMP

Morton A. Kreitchman, South Orange, N.J., assignor to Valcor Engineering Corporation, Kenilworth, N.J.

Filed Aug. 11, 1969, Ser. No. 849,067
Int. Cl. F04b 17/04
U.S. Cl. 417—417 8 Claims



The present invention includes an electromagnetically responsive pump including a spring-biased piston assembly reciprocatory within a cylinder. Inlet and outlet fittings formed with inlet and outlet ports, respectively, are secured to opposite ends of the cylinder. An electromagnetic coil surrounds a portion of the cylinder and, when energized, is operative to move the piston assembly against its spring bias. The piston assembly is formed with a fluid-conducting slot which communicates with said outlet port. Sealing means for sealing said slot from the inlet port comprise a sealing ring engaging inner walls of the cylinder, and flanges forming part of said piston assembly spaced from and disposed on opposite sides of the sealing ring, said flanges movably engaging first and second portions of the sealing ring during suction and return strokes of the piston assembly, said slot being sealed from the inlet port during the suction stroke and communicating therewith during the return stroke. A spring-biased check valve normally seals the inlet port.

3,601,510
MODIFIED HEAD FOR SOAP INJECTOR UNIT

Harry J. Sadler, St. Paul; Ramon Pareja, Minneapolis, and John Leschisin, Minneapolis, all of, Minn., assignors to Hypro, Inc., St. Paul, Minn.

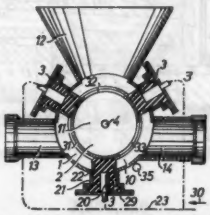
Filed Aug. 25, 1969, Ser. No. 852,684
Int. Cl. F04b 39/10, 7/00
U.S. Cl. 417—503 7 Claims

Induction means for use in combination with a positive displacement pump, the pump having a body with wall means and cover means defining a pumping chamber, a reciprocating piston disposed in a cylinder communicating with the chamber, a source of fluid under pressure being coupled to said pump through a supply conduit, inlet and outlet orifices communicating with said chamber and having inlet and outlet valves respectively for intermittent isolation of the chamber during the pumping strokes, the induction means being arranged in communication with the pumping chamber and being adapted to induce fluid flow into the pumping chamber for discharge through the positive displacement pump structure, the induction means including induction inlet means for coupling the chamber to a supply reservoir and communicating with said pumping chamber through a certain induction orifice, and an adjustable control means for controlling the flow of fluid from the supply reservoir to the induction orifice, and baffle means formed in the chamber and partially isolating the pumping cylinder and the induction orifice from the inlet orifice, the baffle means substantially impeding the flow of fluid from the source of fluid under pressure to the pumping cylinder so that upon each suction stroke of the piston, the pressure of the pumping chamber falls to a level below atmospheric.

3,601,511
ROTARY DISTRIBUTOR

Bechthold Freiherr von Massenbach, Landstrasse 3, CH-8750 Glarus, Schweiz, Switzerland

Filed June 3, 1969, Ser. No. 829,926
Claims priority, application Austria, June 5, 1968, A 5384/68
Int. Cl. F04b 7/00, 15/02, 39/08
U.S. Cl. 417—506 14 Claims

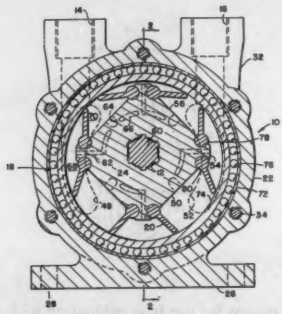


A rotary distributor for slurry pumps and in particular a concrete pump. The pump has an apertured valve member cooperating with inlet and discharge apertures in the housing and alignable to correspond to suction or discharge positions. Sealing means are provided between the housing and valve and are located between inlet and discharge apertures and are displaceable radially inwardly to seal the space between the housing and valve member.

3,601,512
ROTARY MOTOR

Henry Kehl, 3283 Byng Road, Windsor, Ontario, Canada

Filed Sept. 5, 1969, Ser. No. 855,567
Int. Cl. F01c *21/00, 1/00;* F04c *1/00*
U.S. Cl. 418—77 6 Claims

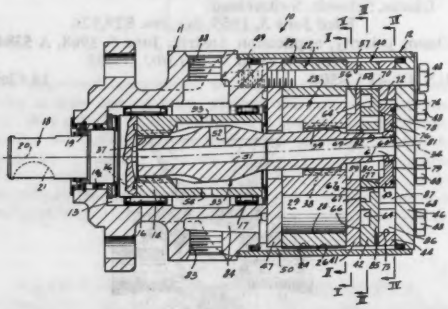


A rotary device for use as a pump or motor including vane structure pivoted to a rotor and a speed ring for reducing friction between a motor housing and the rotor vane structure. The speed ring is positioned between the motor housing and rotor and bearings are provided in the speed ring to permit free rotation of a portion of the speed ring within the housing. The rotor vanes are provided in pairs at the radially outer portions of alternate radially inner and outer rotor portions for pivotal movement toward and away from the speed ring on rotation of the rotor which is displaced axially from the axis of the housing and speed ring which are concentric. Connecting pressure-equalizing grooves are provided in the rotor and side covers of the motor structure operable to equalize the pressure between radially outer and radially inner portions of the rotor separated by vanes over a portion of the angular rotation of the rotor.

3,601,513
HYDRAULIC DEVICE

Hollis N. White, Jr., Lafayette, Ind., assignor to TRW Inc., Cleveland, Ohio

Filed July 22, 1969, Ser. No. 843,611
Int. Cl. F01c *1/02;* F04c *1/02;* F01c *21/10*
U.S. Cl. 418—61 13 Claims

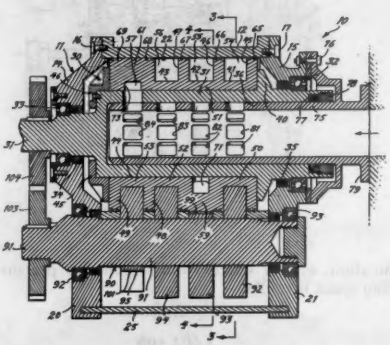


A hydraulic device of the type having inner and outer toothed or lobed members of a gerotor gearset which rotate and orbit relative to one another to provide continually expanding and contracting fluid-pumping chambers or pockets therebetween. The inner toothed member is made of sintered iron. A casing surrounds the inner toothed member in radially spaced relation thereto to provide an annular chamber which is hydraulically pressurized to impose a hydraulic compressive hoop stress on the inner toothed member. A metal sleeve is also pressed on the inner toothed member to impose a mechanical compressive hoop stress thereon.

3,601,514
ROTARY MACHINE

Kermit J. Afner, 41 Saint Denis St., Florissant, Mo.

Filed July 23, 1969, Ser. No. 843,931
Int. Cl. F01c *1/08, 11/00*
U.S. Cl. 418—188 2 Claims

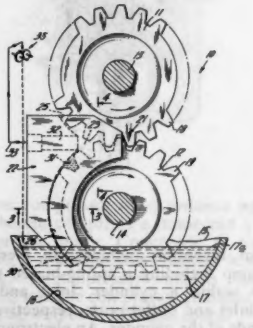


A rotary machine for use as a pump or motor wherein a hollow rotor is rotatable within a casing and combines with the latter to define therebetween an annular chamber. A vane or arm extends from the rotor for rotation therewith about the annular extent of the chamber and a fluid inlet passageway communicates between the hollow of the rotor and the chamber on one side of the vane or arm for passing fluid into the chamber on said one side of the vane. An outlet is provided in the casing for the egress of fluid from the chamber on the other side of the rotor vane.

3,601,515
LUBRICANT PUMP

Winton J. Pelizzoni, Hagerstown, Md., assignor to Mack Trucks, Inc., Allentown, Pa.

Filed July 30, 1969, Ser. No. 845,993
Int. Cl. F01c *1/18*
U.S. Cl. 418—206 11 Claims



A lubricant pump especially suitable for automotive transmissions and the like employing mating gears, at least one of which extends into a sump in a lower casing area. A channel-defining adapter receives the teeth of two mating gears as they converge toward the area of gear engagement. The adapter and that part of its channel receiving the teeth of at least one gear extend below the lubricant level in the sump to substantially close the spaces between adjacent gear teeth, thus defining compartments within which lubricant is transported toward the location at which the gears converge. By virtue of the increased pressure at the convergence of the

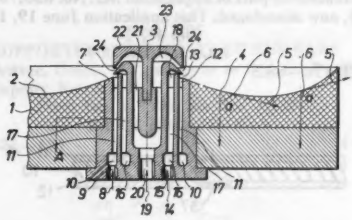
gear teeth, the transported lubricant is pumped through an outlet passage in the adapter adjacent the area of gear engagement for remote lubrication of other components. One or both of the mating gears may extend into the lubricant of the sump.

3,601,516

METHOD FOR THE COMBUSTION OF THIN FILMS OF LIQUID FUELS, AND A BURNER ARRANGEMENT FOR REALIZING THE METHOD

Karoly Somhegyi; Tamas Rapp, and Gyorgy Sasvari, all of Budapest, Hungary, assignors to Nikex Nekezipari Kulkereskedelmi Vallalt, Budapest, Hungary

Filed Oct. 9, 1969, Ser. No. 865,006
Claims priority, application Hungary, Oct. 11, 1968, MA-1895
Int. Cl. F23c *5/20*
U.S. Cl. 431—8 **8 Claims**



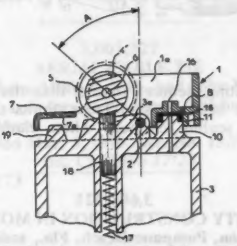
Liquid fuel is spread and burned in a thin film on a solid surface, either by pressure of the liquid fuel itself, or else by pressure of a carrier gas. Combustion air is blown parallel along the liquid film. High specific surface of the fuel and high velocity of the fuel and air relative to each other are thus simultaneously achieved.

3,601,517

ROCKING HEAD FOR PORTABLE LIGHTING DEVICES SUCH AS LIGHTERS OPERATING ON PRESSURIZED LIQUEFIED GAS

Claude Roland Julius Rosenthal, Paris, France, assignor to Pierre Keller, Tanger, Morocco

Filed Nov. 12, 1969, Ser. No. 875,988
Claims priority, application France, Nov. 19, 1968, 174,281
Int. Cl. F23q *2/16*
U.S. Cl. 431—254 **5 Claims**



The lighting device is provided with a lighter head constituted by a single rigid lever, capable of freely rocking on either side of a fulcrum connecting it to the body of said device, said lever comprising, on one side of the fulcrum, an arm and a knurled roller continuously subjected to the action of a spring so as to raise this side of the said lever, and on the other side of the fulcrum a closing cap which, when resting upon an escape opening for the expanded gas, closes said opening.

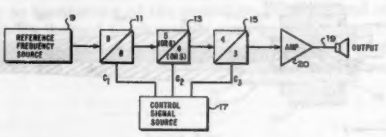
ELECTRICAL

3,601,518

MUSICAL INSTRUMENT AND METHOD EMPLOYING REFERENCE FREQUENCY SOURCE AND CONTROLLED PERIOD MULTIPLIERS THEREFOR

Charles M. Hill, 567 Van Buren, Los Altos, Calif.

Filed Oct. 6, 1969, Ser. No. 863,979
Int. Cl. G10h *5/06*
U.S. Cl. 84—1.01 **13 Claims**



A single reference frequency source is coupled to a series of controlled period multipliers (frequency dividers) for selecting a musical keynote and for producing selected output tones that vary according to extensions of the natural or diatonic scale. The output tone selectors are arranged in a two-dimensional array correlating tonal intervals with spatial relationships.

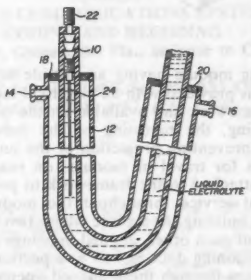
3,601,519

ELECTROLYTIC CONDUCTOR

Maurice Paul Wanner, Geneva, Switzerland, and Neil Rudolph Wallis, Goring on Thames, England, assignors to Aerocoat S. A., Geneva, Switzerland

Filed May 11, 1970, Ser. No. 36,027
Claims priority, application Switzerland, May 14, 1969, 7,465/69
Int. Cl. H01b *1/00;* **B05b** *5/00*
U.S. Cl. 174—9 F **9 Claims**

In an electrolytic conductor for connecting a high voltage direct current source to a utilization device and comprising a flexible tube which contains an electrolyte and whose ends are fitted with electrodes in contact with the electrolyte, the space inside the tube that holds the electrolyte is made to



have a cross section which progressively increases from the end of the tube intended to be connected to the current source, as by tapering the inner surface of the tube.

3,601,520

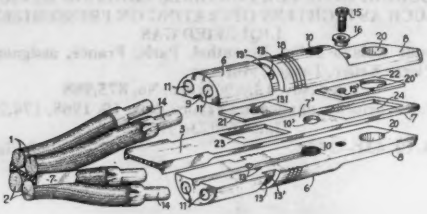
TERMINAL STRUCTURE FOR A MULTICONDUCTOR CABLE COOLED BY A CIRCULATING FLUID

Armand Carasso, 71 Avenue du Roule, 92 Neuilly-sur Seine, France

Filed Sept. 3, 1969, Ser. No. 854,839
Claims priority, application France, Sept. 6, 1968, 165,294
Int. Cl. H01b *7/34*
U.S. Cl. 174—15 **8 Claims**

A terminal structure of a multiconductor electric cable wherein the terminal is in two parts and two groups of conductors of different polarities separated by a separating ele-

ment are cooled by a fluid in a sealing sheath. According to the invention, an elastic sealing element is interposed between plane faces of the two terminal parts in the extension of the separating element. At least one rigid incompressible insulating element, thinner than the sealing element and interposed between said faces, limits the pressure exerted on the sealing element when clamping said parts together.



3,601,521

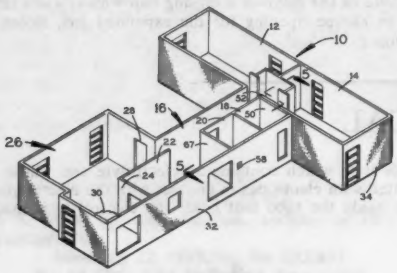
UTILITY CONSTRUCTION IN MODULES

Evans T. Morton, Pompano Beach, Fla., assignor to Behring Corporation, Fort Lauderdale, Fla.

Filed May 18, 1970, Ser. No. 38,248

Int. Cl. H02g *3/28*

U.S. Cl. 174—48 **8 Claims**



A building module having an outside service wall with a framework is provided with an electrical meter unit recessed into the framework and available on the outside thereof for meter reading, the recessing of the meter unit into the framework preventing projection of the unit beyond dimensional limits for travel of modules on roadways. Electrical conduit is attached to the framework to provide distribution of electrical service throughout the module and to other parts of the building. At a place where two walls of adjoining modules abut each other, aligned openings are provided, and an air-conditioning duct as well as a portion of the electrical conduit passes through these aligned openings to provide air and electrical interconnection between modules.

3,601,522

COMPOSITE CERAMIC PACKAGE BREAKAWAY NOTCH

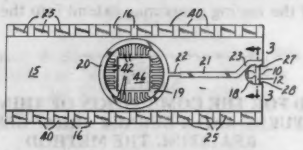
James E. Lynch, Chattanooga, Tenn., assignor to American Lava Corporation, Chattanooga, Tenn.

Continuation-in-part of application Ser. No. 843,461, July 22, 1969, now abandoned. This application June 18, 1970, Ser. No. 47,186

Int. Cl. H05k *1/04, 5/06*

U.S. Cl. 174—68.5 **8 Claims**

A small portion of the electrical circuit connecting at least two exposed conductive surfaces is applied on a segment, which may be single thin ply, of ceramic forming the composite structure. Breaking away of or otherwise removing the segment or thin ply is effective to separate the surfaces electrically. This is convenient in electroplating surfaces which



are not readily accessible under certain plating conditions and provides grounding during mounting of chips.

3,601,523

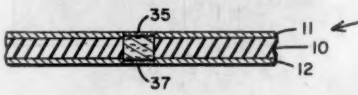
THROUGH HOLE CONNECTORS

Lloyd G. Arndt, St. Paul, Minn., assignor to Buckbee-Mears Company, St. Paul, Minn.

Continuation-in-part of application Ser. No. 855,703, Sept. 5, 1969, now abandoned. This application June 19, 1970, Ser. No. 47,714

Int. Cl. H05k *1/04*

U.S. Cl. 174—68.5 **7 Claims**



A through hole connector incorporating a low-resistance electrical connection between electrical leads which are located on opposite sides of an insulated layer and a conducting epoxy connector in the hole formed by forcing a conductive adhesive into the hole and compressing a layer of conducting powder onto the adhesive before curing.

3,601,524

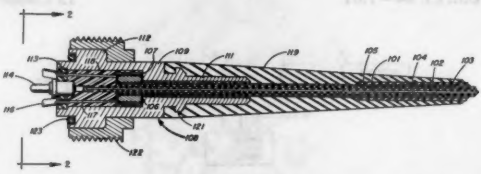
UNDERWATER MARINE CABLE

Samuel H. Kauffman, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Dec. 9, 1965, Ser. No. 513,126

Int. Cl. H02g *15/02*

U.S. Cl. 174—74 R **5 Claims**



1. The combination of a new and improved flexible marine cable and a watertight end coupler formed thereon, comprising

a multistrand center conductor,

a first inner layer of insulation of high density polyethylene surrounding said center conductor to provide good electrical insulation,

a second outer layer of insulation of nylon covering said inner layer of insulation to provide good mechanical strength,

a braided coaxial outer conductor surrounding the insulation and supported thereby,

a high density polyethylene jacket encasing said outer conductor to provide corrosion protection and abrasion resistance,

a swaged assembly including a collar through which the combination of said outer conductor, insulation, and center conductor passes, the strands of said outer conductor being laid back over said collar, and a collet swaged over said collar, the center conductor extending beyond said swaged assembly,

a generally cylindrical cable end fitting having a first axial bore therethrough through which the combination of said outer conductor, insulation, and center conductor passes, and a second larger diameter axial bore part way therethrough which receives said swaged assembly,

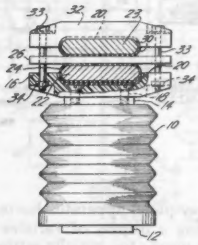
a first seal comprising a potting compound filling the cavity in said second bore, and

a second seal comprising a tapered polyurethane section molded over said end fitting and over a portion of said polyethylene jacket encasing said outer conductor.

3,601,525
SUPPORTED HIGH VOLTAGE BUS BARS

John J. Oravec, Union, N.J., assignor to Federal Pacific Electric Company, Newark, N.J.

Filed Jan. 9, 1970, Ser. No. 1,822
Int. Cl. H01b *17/18*
U.S. Cl. 174—171 **4 Claims**

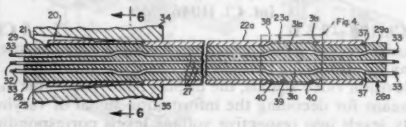


Bus bar clamps for insulation covered bus bars in a high voltage alternating current system are carried by standoff insulators, these bus bar clamps being made of insulating material to avoid the effect, in the case of prior art metal clamps, of the clamps becoming energized by capacitance to the bus bar. This capacitance resulted in sustained electrical stress on the insulation covering of the bus bars, leading possibly to breakdown of the insulation covering and resulting in shock hazard to personnel coming into contact with the supposedly insulated prior art metal clamps. All of this is avoided by the clamps made of insulation in the novel assembly.

3,601,526
ELECTRICAL PENETRANT STRUCTURE

Frederick G. Bohne, Buffalo, and Mark O. Johnson, Grand Island, both of, N.Y., assignors to Conax Corporation, Buffalo, N.Y.

Filed July 30, 1968, Ser. No. 748,715
Int. Cl. H01b *17/26*
U.S. Cl. 174—151 **3 Claims**

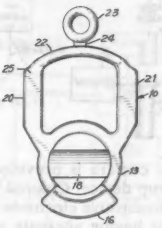


An electrical penetrant structure, and a method of making the same, are disclosed for feeding sealingly one or more electrical conductors through a wall, such as the containment vessel wall in a nuclear-powered electrical generating station. The penetrant structure comprises a tubular metal housing through which a metal conductor extends noncentrally but in spaced relation to the surrounding housing wall surface, such surface being annularly recessed ro provide an enlarged chamber filled with resilient insulating material in compression and surrounding a laterally offset portion of said conductor. The method for making such structure involves swagging an assembly of the housing having an external groove therein surrounding a body of insulating material having a noncentral hole through which the conductor extends, this swagging causing the insulating material to be compressed between the housing and conductor and the portion of the conductor adjacent the groove to become laterally offset while embedded in the insulating material.

3,601,527
AERIAL CABLE TIE

James P. Markham, Milford, N.H., and John F. Jost, Glastonbury, Conn., assignors to Synthetic Products Mfg. Corp., Leominster, Mass.

Filed Mar. 3, 1970, Ser. No. 15,991
Int. Cl. H01b *17/22*
U.S. Cl. 174—173 **8 Claims**

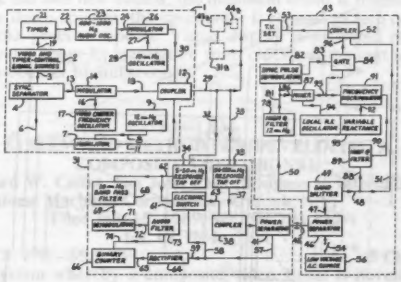


This disclosure generally relates to an elastomeric fastener or "tie" which is used by the electrical power transmission companies in securing aerial conductor cables to pin or post type insulators.

3,601,528
TELEVISION COMMUNICATIONS SYSTEM WITH CODING AND DECODING

David S. McVoy, Gainesville, Fla., assignor to Coaxial Scientific Corporation

Filed June 16, 1969, Ser. No. 833,519
Int. Cl. H04n *1/32, 1/34, 1/44*
U.S. Cl. 178—5.1 **10 Claims**



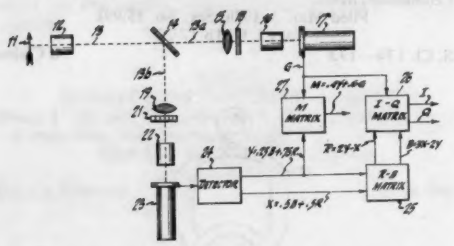
A subscription television system comprises a transmitter unit that codes or scrambles its composite output signals comprising video intelligence signals and synchronizing pulses by separating the video signals from the synchronizing

pulses and transmitting them over separate carriers to a decoding receiver. The synchronizing pulse carrier is transmitted to the receiver over a cable while the video carrier may be transmitted over-the-air or over the cable. The receiver passes the scrambled video to the subscriber's television set. Circuitry is provided, however, for selectively passing the synchronizing pulse carrier through the receiver and forming the decoded or unscrambled original composite signal, and at the same time activating a recorder to measure the amount of viewing time.

3,601,529
COLOR TELEVISION SIGNAL-GENERATING APPARATUS

Robert A. Dischert, Burlington, N.J., assignor to RCA Corporation

Continuation of application Ser. No. 487,374, Sept. 15, 1965, now abandoned. This application Nov. 20, 1968, Ser. No. 789,630
Int. Cl. H04n 9/06
U.S. Cl. 178—5.4 ST **21 Claims**

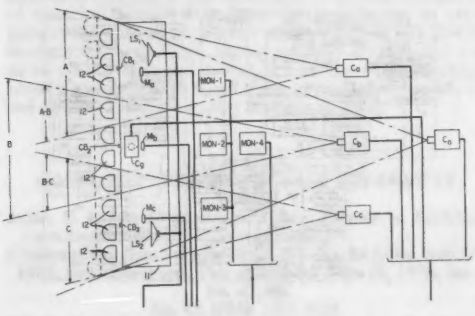


A color television camera is provided which includes at least one image pickup device. Colored light from a scene is encoded on the photosensitive electrode of the pickup device by an encoding filter having alternate strips of material for separating the light into component colors. The alternate encoding filter strips are selected such that they have equal transmissivity for white light, thereby suppressing the encoded color carrier frequency for white light. Signal processing means separate the color component signals and combine them with a brightness signal to provide signals representative of the color and brightness of the scene.

3,601,530
VIDEO CONFERENCE SYSTEM USING VOICE-SWITCHED CAMERAS

Robert C. Edson, Brielle; Doren Mitchell, Martinsville, and George P. Reid, Holmdel, all of, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 29, 1969, Ser. No. 820,131
Int. Cl. H04n 5/24
U.S. Cl. 178—5.6 **30 Claims**

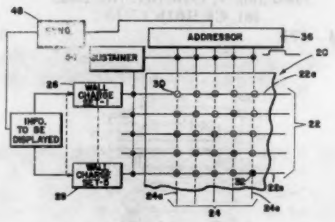


This disclosure relates to a video conference system for a plurality of groups of remotely located conferees. At each group location, a plurality of video cameras are used and the field of each is restricted to a small number of persons in the group. Voice voting and switching are used to determine the location of the person in the group who is talking and to "enable" the appropriate camera, in response thereto, so that the talker will be seen at the remote location. As different people in the group speak, the appropriate cameras covering the same are successively enabled so that the outgoing video signal matches the audio signal. Operational features include a graphic mode, for the remote display of written or graphic material, and a conference leader mode, in which the system is biased in favor of the leader so as to give him substantial control over the conference.

3,601,531
PLASMA DISPLAY PANEL APPARATUS HAVING MULTILEVEL STABLE STATES FOR VARIABLE INTENSITY

Donald L. Bitzer, Urbana; Hiram Gene Slottow, Urbana, and William Petty, Champaign, all of, Ill., assignors to University of Illinois Foundation, Urbana, Ill.

Filed Oct. 8, 1968, Ser. No. 765,939
Int. Cl. H04n 5/66
U.S. Cl. 178—7.3 D **8 Claims**



A plasma display panel apparatus having multilevel stable states for providing a display of variable intensity, the apparatus including means for initially setting in an amount of wall charge in each respective cell according to the intensity of the information to be displayed, and means for providing a sustaining signal for displaying the cells and maintaining the respective wall charges therein, the sustaining signal waveform having alternate stable and unstable regions. The means for setting in of the initial wall charge in respective cells is provided such that the cells having information which is to be displayed with a higher intensity are supplied with a higher initial wall charge than the cells having information which is to be displayed at a relatively lower intensity. The level of intensity depends on the slope of the exciting or sustaining signal at the time of discharge of the cell. The apparatus providing a rippled sustaining signal of alternate stable and unstable regions insures that the initial wall charge information set into the display panel will remain at the initial level, thereby providing a constantly recurring permanent display.

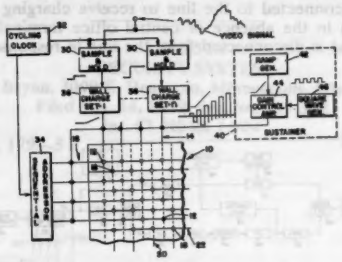
3,601,532
PLASMA DISPLAY PANEL APPARATUS HAVING VARIABLE-INTENSITY DISPLAY

Donald L. Bitzer, and Hiram Gene Slottow, both of Urbana, Ill., assignors to University of Illinois Foundation, Urbana, Ill.

Filed Oct. 8, 1968, Ser. No. 765,950
Int. Cl. H04n 5/66
U.S. Cl. 178—7.3 D **8 Claims**

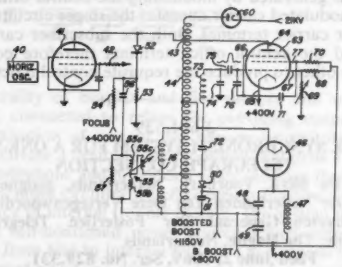
Plasma display panel apparatus having a variable-intensity display for displaying periodically changing information, such as television video signals, the display panel apparatus including means for decoding the information signal of varying intensity levels into respective voltage levels corresponding to the respective cells in a display of the plasma display panel, means for entering the respective voltage levels into corresponding cells such that the initial wall voltage of each cell corresponds to the incoming information signal intensity

level to be displayed at the respective cells forming the plasma display panel; and means for discharging the cells in



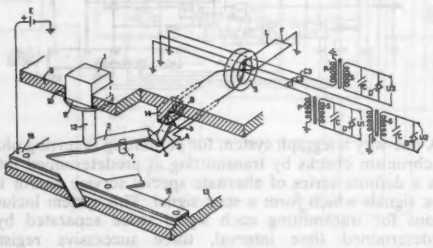
accordance with the initial wall voltage, such that a variable-intensity display is obtained.

3,601,533
REGULATED HIGH VOLTAGE SUPPLY
Lester Tucker Matzek, Lombard, Ill., assignor to Warwick Electronics Inc.
Filed June 22, 1967, Ser. No. 648,028
Int. Cl. H04n 3/18
U.S. Cl. 178—7.5 R 2 Claims



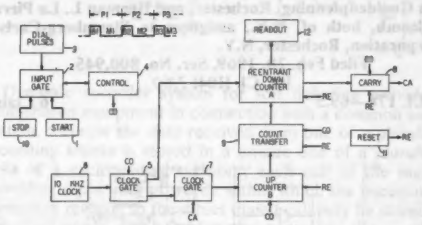
A regulator circuit for a color television receiver in which a gate tube is connected in shunt with a portion of the horizontal output transformer from which high voltages are derived. The gate tube is normally nonconducting, but is pulsed into conduction during retrace, when the high voltage rectifiers conduct. The bias of the gate is varied in accordance with the current drawn by the cathode ray tube. The gate conducts more heavily when the current drain is low than when it is high, keeping the output of the high voltage power supplies relatively constant.

3,601,534
ALPHANUMERIC KEYBOARD
Alfredo Olivei, Turin, Italy, assignor to Ing C. Olivetti & C., S.p.A., Ivrea, Italy
Filed Jan. 29, 1969, Ser. No. 795,005
Claims priority, application Italy, Feb. 13, 1968, 50498A68
Int. Cl. H04l 15/06
U.S. Cl. 178—17 C 7 Claims



A key-operated actuating mechanism for an alphanumeric keyboard in which the key bears through a stem on one side of a flexible electrically conductive tongue which has one end fixed. A fulcrum is mounted proximate the other side of the tongue between the key and the free end for causing the tongue to bow when the key is depressed. The depression of the key causes the free end of the tongue to swing up and to break its electrical contact with a first contact and to establish electrical contact with a second contact. This in turn causes a source of electrical potential to be differently connected to winding on a magnetic core having a square hysteresis loop and thereby switches the core to the opposite state. An output signal is thereby generated in output windings on the core, the output signal being so coded as to identify the key struck.

3,601,535
MEASUREMENT OF MINIMUM OF A SERIES OF TIME INTERVALS
Robert B. Heick, Eatontown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Nov. 24, 1969, Ser. No. 879,341
Int. Cl. H04l 1/00; H04m 3/22, 1/24
U.S. Cl. 178—69 A 11 Claims

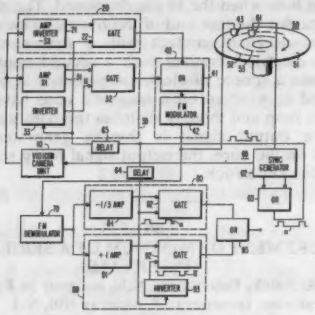


The circuit uses digital technique to measure the minimum break (or make) interval over a series of telephone dial pulses. During the first break, clock pulses are serially counted in a binary coded decimal up-counter. At the end of the first break, the up-count is transferred as the same count to a binary coded reentrant decimal down-counter of the same count capacity as the up-counter; and, at the start of the next break, the up-counter is cleared to zero count. During the second (new) break, clock pulses are serially subtracted from the count in the down-counter while being serially counted in the up-counter. If any clock pulses cause the count in the down-counter to go from zero count to capacity count, further up-counting in the up-counter is stopped. After each new measured break, the up-counter contains the minimum of the old and new counts, the minimum count is transferred to the down-counter, the up-counter is cleared to zero count, and the process repeats. Visual display is provided of the minimum count by translation from clock pulse count in the down-counter to milliseconds.

3,601,536
SYSTEM AND METHOD FOR DEVELOPING A COMPOSITE VIDEO SIGNAL
Richard W. Calfee, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 15, 1969, Ser. No. 791,419
Int. Cl. H04n 5/04
U.S. Cl. 178—69.5 TV 5 Claims

A system whereby a composite video signal is developed by a vidicon camera tube which is driven off a clock track from a rotating magnetic disk. The synchronizing signals from this composite signal are removed and inverted to signals within the same amplitude range as the analog video signal, and combined with the analog video signal. This new composite video signal with inverted sync frequency modu-

lates a carrier which is applied to a rotating disk. Upon readout, this frequency-modulated signal is demodulated and

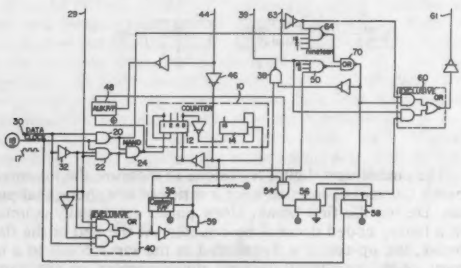


the inverted sync is removed. Conventional sync time replaces the inverted sync.

3,601,537
METHOD OF AND DETECTING CIRCUIT FOR SYNCHRONIZING MASTER-REMOTE SIGNALLING SYSTEM

Klaus Gueldenpfenning, Rochester, and Herman L. La Pierre, Holcomb, both of, N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Feb. 20, 1969, Ser. No. 800,945
Int. Cl. H04l *7/00*
U.S. Cl. 178—69.5 **6 Claims**



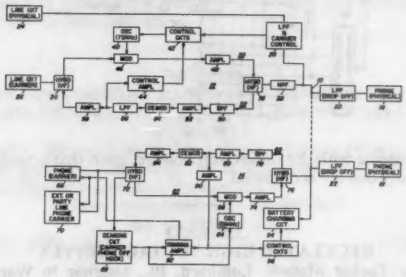
A master-remote, digital signalling system is synchronized at the beginning of each message to be transmitted by sending two pulses of distinctive length, which are detected at the receiver. The detector circuit includes counters and a series of gates for distinguishing the special synchronizing pulses from the message pulses.

3,601,538
CARRIER AND VOICE-FREQUENCY TELEPHONE SYSTEM

Peter J. May, Webster; Uno Randmere, Rochester; Frederick C. Sabernick, Fairport, and Morris A. Suntop, Rochester, all of, N.Y., assignors to Stromberg-Carlson Corporation

Filed Feb. 24, 1969, Ser. No. 801,590
Int. Cl. H04h *1/08*
U.S. Cl. 179—2.5 **15 Claims**

This system serves the purpose of providing private line service over an existing telephone line and includes a central office terminal at one end of the line and a subscriber terminal at the other end of the line. Physical phones may be connected to the existing line and a line circuit at the central office is coupled to the line for connecting the central office equipment to the phones. Both the subscriber and the central office terminals have transmitting channels in which a carrier oscillator signal may be modulated and applied to the line. The control functions in the system are operated in response to the absence or presence of carrier oscillations on the line. Circuits are provided at the central office terminal which are responsive to a reception of a carrier signal transmitted from the subscriber terminal, or in off-hook condition of one of the physical phones for turning on the central office terminal carrier oscillator. The subscriber terminal has a battery which is connected to the line to receive charging current therefrom in the absence of central office terminal carrier signals and is disconnected from the line in response to the

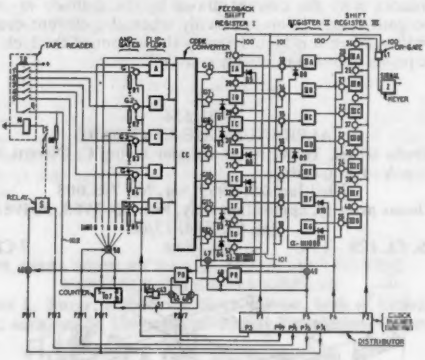


presence of central office carrier signals. Ringing current for the telephone which is connected to the subscriber carrier terminal is generated by modulating the central office carrier. The modulated carrier operates the ringer circuitry at the subscriber carrier terminal. Both the subscriber carrier terminal and the central office terminal therefore cooperate with each other to produce the requisite control functions.

3,601,539
PHASE SYNCHRONISM SYSTEM FOR A ONE-WAY TELEGRAPH CONNECTION

Herman Da Silva, Voorburg, Netherlands, assignor to De Staat Der Nederlanden Ten Deze Vertegenwoordigd Door De Directeur-Generaal Der Posterijen Telegrafie En Telefonie, The Hague, Netherlands

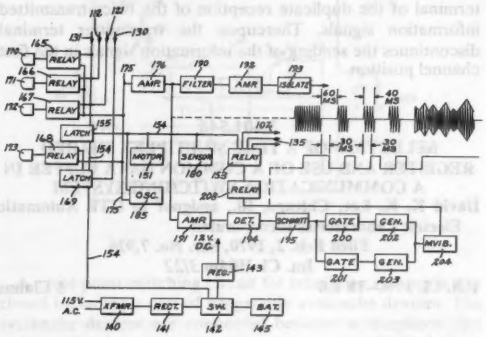
Filed June 2, 1969, Ser. No. 829,331
Claims priority, application Netherlands, June 6, 1968, 6807940
Int. Cl. H04l *7/10*
U.S. Cl. 178—4.1 **15 Claims**



A one-way telegraph system for permitting recurring phase synchronism checks by transmitting at predetermined intervals a definite series of alternate special service and/or idle time signals which form a start signal. This system includes means for transmitting each signal twice separated by a predetermined time interval, three successive registers therefor, means for detecting in the transmitter a certain regularly occurring signal, such as the "line feed" signal, counter means for interrupting traffic for said predetermined

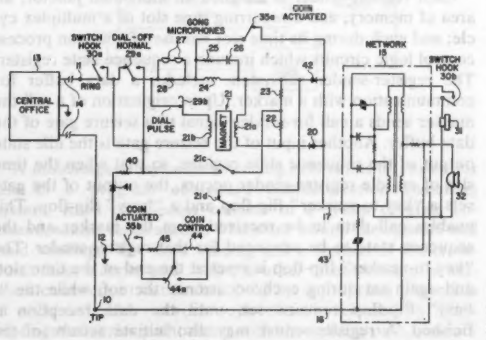
interval, means for generating said start signal in said registers and transmitting said start signal during said predetermined interval, and a pulse distributor for controlling all said means.

3,601,540
SECURITY SYSTEM
McNeil Bryan, 3000 E. Hennepin, Minneapolis, Minn.
Filed Feb. 14, 1969, Ser. No. 799,382
Int. Cl. H04m *11/04*
U.S. Cl. 179—5 P **2 Claims**



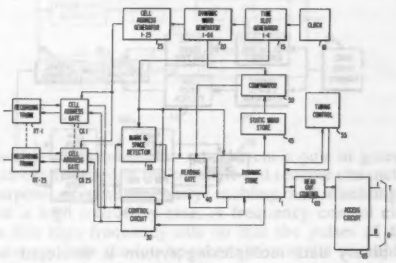
A plurality of burglar and fire sensors and emergency switches connected to relays for providing output signals upon activation of one of the sensors or switches, which signals activate a desired tape recording that dials a remotely located telephone and provides a voice message thereon. The system includes circuitry which energizes indicators upon the occurrence of internal trouble therein. The system further includes a self-contained power source which automatically switches from line to internal batteries and means for delaying recorded telephone dialing pulses to reduce errors in dialing due to momentary failures of the system.

3,601,541
TELEPHONE PAYSTATION PROVIDING FREE SERVICE TO SPECIAL NUMBERS
Joseph Thompson, Glanworth, Ontario, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada
Filed Dec. 12, 1969, Ser. No. 884,481
Int. Cl. H04m *17/02*
U.S. Cl. 179—6.3 **4 Claims**



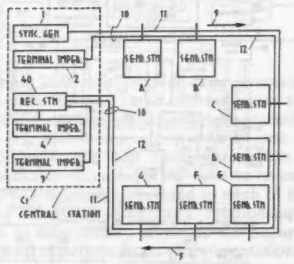
A telephone paystation which permits calling to one or more preselected numbers without deposition of a coin. No attempt is made to restrict the dialling of any number. However, the action of dialling causes the telephone's transmit and receive circuit to be at least partly disabled. Enabling of the circuit is accomplished by deposition of a coin or by transmission of a control signal from the central office which is sent in response to the dialling of the preselected numbers.

3,601,542
DYNAMIC RECORDER SYSTEM FOR TOLL TICKETING
Donald R. Gill, Fairport; William H. Stewart, Webster, and Bernard H. Root, Palmyra, all of, N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.
Filed Dec. 5, 1969, Ser. No. 882,453
Int. Cl. H04m *15/10*
U.S. Cl. 179—9 **28 Claims**



Dynamic recorder system for toll ticketing provided as time-shared equipment in connection with a common control system, wherein the data received from one of a plurality of recording trunks is stored in a unique one of a plurality of cells of a recirculating memory, each cell of the memory providing a plurality of words within which the necessary information relating to the direct dialed call may be stored and selective words within which the necessary timing of the system operation is carried out.

3,601,543
TIME DIVISION DATA TRANSMISSION SYSTEM
Maurice M. Maniere, and Henri L. Tambutte, both of Paris, France, assignors to Lignes Telegraphiques Et Telephoniques, Paris, France
Filed Mar. 17, 1970, Ser. No. 20,323
Claims priority, application France, Mar. 21, 1969, 08241
Int. Cl. H04j *3/08*
U.S. Cl. 179—15 AL **10 Claims**



A time division binary-coded data transmission system using two parallel and juxtaposed transmission lines, with a number of sending and receiving stations distributed along said lines and coupled to both of them. The first line transmits synchronization frames supplied by a central station, and the second one the information. The system is characterized in that at each sending station, the information signals transmitted by the second line are derived from the

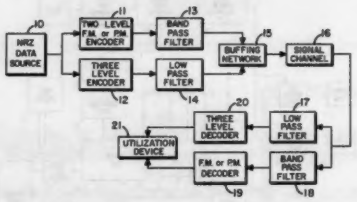
synchronization signals transmitted by the first, by means of a coupling circuit modulating the latter signals according to the coding conditions of the data to be transmitted, without altering the essential features of their waveshape. Thanks to this arrangement, the total lengths of line through which synchronization and coded data signals are transmitted are the same, and the thus preserved similarity of their waveshapes allows correct demodulation of the latter by simple comparison with the former.

3,601,544

BASEBAND FREQUENCY MULTIPLEXING SCHEME

John V. Murphy, Norristown, Pa., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Apr. 16, 1969, Ser. No. 816,609
Int. Cl. H04j *9/00*
U.S. Cl. 179—15 BM **5 Claims**



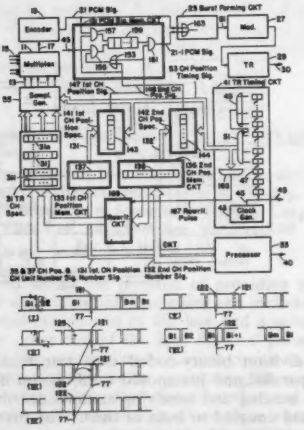
A binary data multiplexing system is disclosed wherein data from a binary source is applied to two encoders. One encoder operates to impart a self-clocking coding to the data and to thus cause the data to lie in a frequency band near the upper limits of the baseband frequency spectrum of the system. The second encoder operates to impart a low frequency coding to the data and to thus cause the data to lie in a frequency band near the lower limits of the baseband frequency spectrum of the system. In this way the data transmitted by the two encoders is made to lie in different and separated frequency bands.

3,601,545

TIME DIVISION MULTIPLEX COMMUNICATION SYSTEM

Akio Saburi, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Dec. 9, 1969, Ser. No. 883,655
Claims priority, application Japan, Dec. 10, 1968, 43/90800
Int. Cl. H04j *3/16*
U.S. Cl. 179—15 BA **26 Claims**



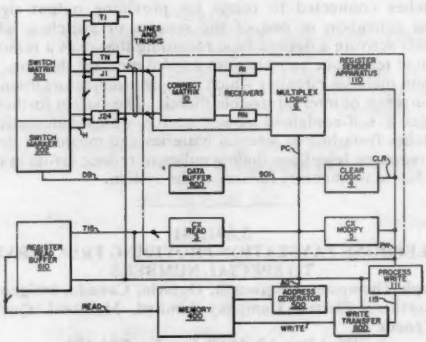
A system having a plurality of stations operable either in the time preassignment mode or in the demand assignment mode for transferring information signals from first channel positions in a frame of the time division multiplexed channels to idle second channel positions in the same without any impairment of such signals. Responsive to a demand signal originating in a transmission-channel-specifying device included in a transmitter terminal for such channel position transfer, the transmitter terminal sends out identical information signals in first and second channel positions in a frame in a predetermined signal burst and at the same time notifies a particular receiving terminal preselected to receive the duplicate signals that the information signals are being sent in duplicate. The preselected receiving terminal derives replicas of the twice-transmitted information signals from the first and second channel positions and apprises the transmitter terminal of the duplicate reception of the twice-transmitted information signals. Thereupon the transmitter terminal discontinues the sending of the information signals in the first channel position.

3,601,546

SELECTION OF A TIME MULTIPLEX SHARED REGISTER AND USE OF A COMMON DATA BUFFER IN A COMMUNICATION SWITCHING SYSTEM

David K. K. Lee, Chicago, Ill., assignor to GTE Automatic Electric Laboratories Incorporated

Filed Feb. 2, 1970, Ser. No. 7,926
Int. Cl. H04m *3/22*
U.S. Cl. 179—18 EB **5 Claims**

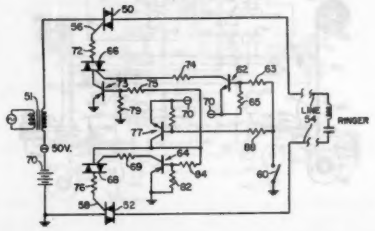


Each register-sender is assigned an individual junctor, an area of memory, and a recurring time slot of a multiplex cycle; and each during its time slot has use of common process control logic circuits which include a sequence state register. The register-sender subsystem includes a data buffer for communication with a marker. Upon origination of a call the marker sends a call-for-service signal to a seizure gate of the data buffer. Another input of the seizure gate is the idle state output of the sequence state register, so that when the time slot of an idle register-sender occurs, the output of the gate sets a "key-to-marker" flip-flop and a "busy" flip-flop. This enables call data to be received from the marker and the sequence state to be advanced for that register-sender. The "key-to-marker" flip-flop is reset at the end of the time slot, and again set during each occurrence thereof, while the "busy" flip-flop remains set, until the data reception is finished. A register-sender may also initiate seizure of the data buffer via the process control sequence state register during a call to send data to the marker. A "conditional busy" flip-flop permits queueing of one register-sender for use of the data buffer.

3,601,547
CROSS-POINT SWITCHING ARRANGEMENTS INCLUDING TRIGGERABLE AVALANCHE DEVICES

Frank J. Potter, Webster, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Feb. 5, 1970, Ser. No. 8,787
Int. Cl. H04q 3/50
U.S. Cl. 179—18 GF 8 Claims

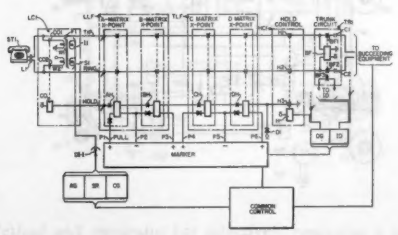


A cross-point switching circuit for telephone systems is disclosed including a pair of triggerable avalanche devices. The avalanche devices are connected between a telephone line and an office battery so that when the connected telephone is off hook and the avalanche devices are triggered, the battery potential is applied across the telephone line. An AC coupling circuit is connected in series with the circuit to provide means for translating the voice signals through the cross-point circuit.

3,601,548
SWITCHING MATRIX RELEASE DELAY CIRCUIT

Johannes Draayer, Wheaton, Ill., assignor to GTE Automatic Electric Laboratories Incorporated

Filed Oct. 20, 1969, Ser. No. 867,656
Int. Cl. H04q 3/42
U.S. Cl. 179—18 GE 2 Claims

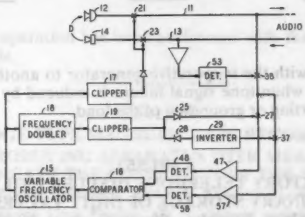


A multistage cross-point switching network is disclosed for use in a program controlled communication switching system. Each cross-point consists of a group of glass enclosed, sealed reeds around which are wound the operate and hold windings. The hold winding and a contact of the cross-point form a series path with the other cross-points of a network connection that is then held by appropriate potentials at each end. The network connection is released by interrupting this series path, along with the talking path conductors. To ensure that the talking conductors are interrupted first, the hold path includes a diode connected across the series path of cross-points to provide a current path to delay their release.

3,601,549
SWITCHING CIRCUIT FOR CANCELLING THE DIRECT SOUND TRANSMISSION FROM THE LOUDSPEAKER TO THE MICROPHONE IN A LOUDSPEAKING TELEPHONE SET

Doren Mitchell, Martinsville, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 25, 1969, Ser. No. 879,801
Int. Cl. H04m 1/20
U.S. Cl. 179—81 B 6 Claims

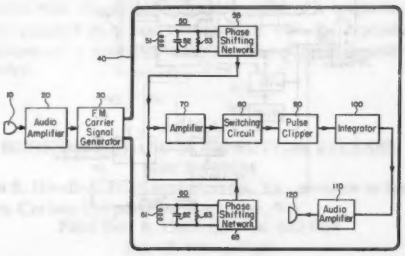


A loudspeaking telephone set wherein a pair of gates are respectively disposed in the transmit and receive channels for the purpose of simultaneously enabling and disabling the same at a high frequency rate. A frequency control circuit adjusts this high frequency rate so that the pulses of direct sound energy from the loudspeaker arrive at the microphone just at the time that the microphone transmit channel is disabled. The undesired direct sound transmission (i.e., direct acoustic feedback) is thus cancelled out.

3,601,550
LOOP COMMUNICATION SYSTEM

John G. Spracklen, Chicago, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Mar. 21, 1969, Ser. No. 809,356
Int. Cl. H04b 1/06, 5/00
U.S. Cl. 179—82 2 Claims



A limited-range, induction-coupled loop communication system for the transmission of audio information to a receiver located within the loop uses a frequency-modulated carrier-wave signal to transmit audio information to one or more receivers located within the loop. Each receiver has a pair of pickup coils preferably mounted at 90° relative to each other and a phase-shifting network connected to each of their outputs to thereby create a quadrature relationship in the received signals to substantially eliminate the occurrence of null conditions with variations in receiver orientation.

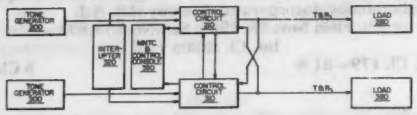
3,601,551
TONE GENERATOR CONTROL CIRCUIT

Vernon F. Weber, Elmhurst, Ill., assignor to GTE Automatic Electric Laboratories, Incorporated

Filed July 31, 1968, Ser. No. 749,065
Int. Cl. H04m 19/02
U.S. Cl. 179—84 VF 1 Claim

A circuit for controlling the application of precise tones to telephone lines for signaling purposes in a telephone

switching system. Two or more tone generators are employed to share the total load presented with the present control circuit automatically switching, upon generator failure, the load



associated with the inoperative generator to another generator, except when tone signal failure is induced by conditions such as shorting or grounding of the load.

3,601,552

REPERTORY TELEPHONE DIALLER UTILIZING BINARY STORAGE OF DIGIT VALVES

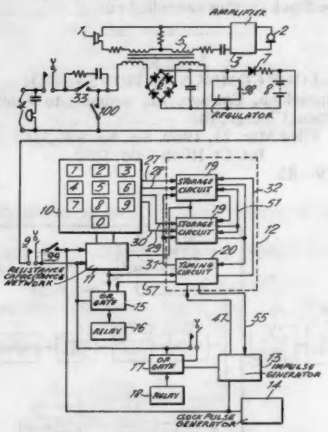
Bernard Sydney Barnaby, Ware; Graham Webb, Ruislip, Middlesex, and Robert Andrew Stevenson, Darlington, all of, England, assignors to The General Electric and English Electric Companies Limited, London, England

Filed Jan. 10, 1969, Ser. No. 790,304

Claims priority, application Great Britain, Jan. 12, 1968, 1923/68

Int. Cl. H04m *1/45*

U.S. Cl. 179—90 B **11 Claims**



An electric impulse transmitter for a telephone instrument having a pushbutton dialling mechanism comprising a cyclic dynamic store which is capable of storing binary coded values relating to, say, 12 digit values, with input and output distributors under control of which the binary values are respectively entered from the pushbutton mechanism and read out to control the operation of a 10-impulse-per-second generator. The store and the distributors comprise dynamic shift registers utilizing metal oxide semiconductor (MOS) transistors.

3,601,553

INFORMATION REPLAY APPARATUS

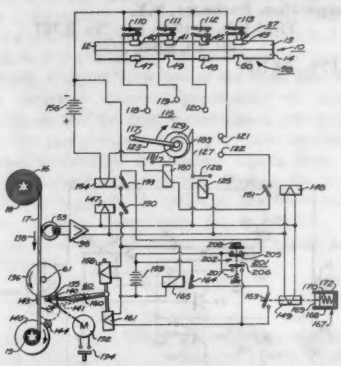
Dexter P. Cooper, Jr., Pasadena, and Arthur Rak, Huntington Beach, both of, Calif., assignors to Bell & Howell Company, Chicago, Ill.

Filed July 21, 1970, Ser. No. 56,803

Int. Cl. G11b *27/12*

U.S. Cl. 179—100.1 P **4 Claims**

An apparatus for selectively replaying a number of features recorded on a recording tape having a casing has an adjustable memory register on the casing for preselecting features for replay. The apparatus further includes a selectively actuable device for overriding the memory register in order to bypass a preselected feature.



3,601,554

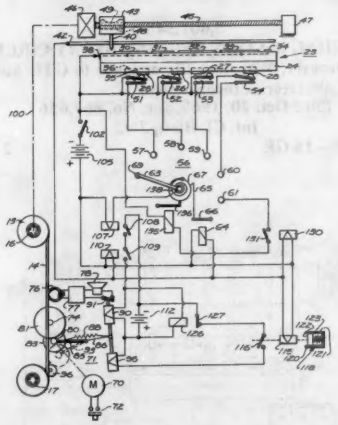
INFORMATION REPLAY METHODS AND APPARATUS

Arthur Rak, Huntington Beach, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Nov. 3, 1969, Ser. No. 873,250

Int. Cl. G11b *27/12*

U.S. Cl. 179—100.1PS **16 Claims**



Apparatus and methods for selectively replaying a number of features recorded on a recording medium having a support, in which markings are provided on said support indicative of the beginnings of said features and designating selected ones of said features for replay, and in which feature replay operations are controlled in response to a sensing of said markings to effect replay of said selected features.

3,601,555

INFORMATION REPLAY METHODS AND APPARATUS

Peter G. Peterson, Winnetka, Ill., assignor to Bell & Howell Company, Chicago, Ill.

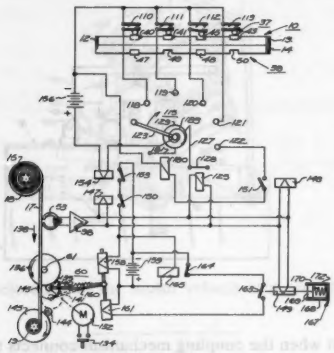
Filed Nov. 3, 1969, Ser. No. 873,288

Int. Cl. G11b *27/12*

U.S. Cl. 179—100.1PS **26 Claims**

Methods and apparatus for selectively replaying a number

of features recorded on a recording medium having a support in which adjustable markings are provided on the support for



alternatively indicating preselections of the features for replay.

3,601,556

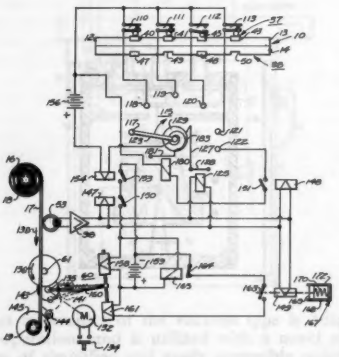
INFORMATION REPLAY METHODS AND APPARATUS

Dexter P. Cooper, Jr., Pasadena, and Arthur Rak, Huntington Beach, both of, Calif., assignors to Bell & Howell Company, Chicago, Ill.

Filed Nov. 3, 1969, Ser. No. 873,289

Int. Cl. G11b *27/12*

U.S. Cl. 179—100.1PS **22 Claims**



Method and apparatus for selectively replaying a number of features recorded on a recording medium having a support in which adjustable markings are provided on the support for alternatively indicating preselections of the features for replay, and in which feature start indications on the recording medium cooperate with said markings in controlling the replay of said features.

3,601,557

COUNTER FOR TAPE-RECORDING SYSTEM

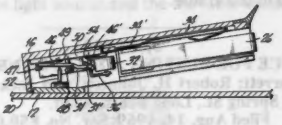
Thomas M. Lennox, Mentor, Ohio, assignor to Scanfax Systems Corporation, New York, N.Y.

Filed Mar. 2, 1970, Ser. No. 15,468

Int. Cl. G11b *5/86;* **G06f** *15/46*

U.S. Cl. 179—100.2 E **9 Claims**

A counter system for use in a tape recorder is described as including switching and circuit means for initiating a single pulse count upon angularization of a cassette-receiving module with respect to a system operational panel after a



recording operation has been performed with the cassette in that module.

3,601,558

CARTRIDGE-TYPE MAGNETIC TAPE RECORDING AND REPRODUCING APPARATUS WITH MEANS TO INDICATE THE COERCIVITY OF THE TAPE

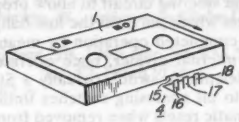
Hiroshi Sugaya, Suita-shi; Fukashi Kobayashi, Hirakata-shi, and Mitsuaki Ono, Osaka, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 13, 1968, Ser. No. 775,348

Claims priority, application Japan, Nov. 20, 1967, Oct. 4, 1968, Oct. 4, 1968, Oct. 4, 1968, Oct. 11, 1968, 42-75019;43-72655;43-87071;43-87072;43-88970

Int. Cl. G11b *5/44, 15/12, 23/08*

U.S. Cl. 179—100.2 Z **6 Claims**



A cartridge-type magnetic tape recording and reproducing apparatus which is so designed that the recording or reproducing conditions are automatically adjusted in accordance with the physical characteristics of a magnetic tape accommodated in a tape cartridge or with the reproducing conditions of a recorded tape accommodated in said tape cartridge.

3,601,559

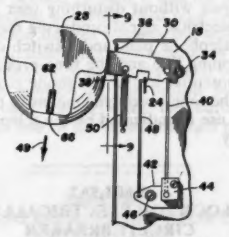
HOOKSWITCH AND HOLD BUTTON RELEASE MECHANISM

Edson S. Hineline, Jr., Charlottesville, Va., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Dec. 8, 1969, Ser. No. 883,024

Int. Cl. H04m *1/08*

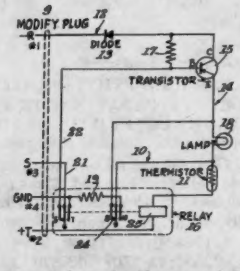
U.S. Cl. 179—164 **9 Claims**



A multiline wall telephone set includes a line select and hold button switch assembly with a hold button release mechanism, and also a hookswitch mounted in a handset cradle. A lever mechanism is coupled between the cradle and

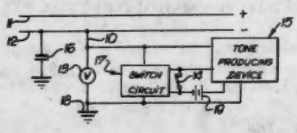
the hold button release mechanism. The hookswitch and the hold button release mechanism are separately and sequentially operated by the weight of the telephone handset when positioned in the cradle.

3,601,560
DEVICE FOR BUSYING A TELEPHONE SWITCH
Jim C. Garrett; Robert H. Johnson, and Jack Shelton, all of 3300 E. Spring St., Long Beach, Calif.
Filed Aug. 14, 1969, Ser. No. 850,079
Int. Cl. H04m 3/22
U.S. Cl. 179—175 5 Claims



A completely automatic and self-powered device provided with solid-state components allowing high input impedance on busy circuits obviating interference with dial pulses or audio during conversation on a telephone line, having a built-in time-delay and steering circuit to allow proper switch train release regardless which party on the line hangs up first, with indication of a completed operation by means of a low current lamp and internal divider, once operated, providing a ground to the telephone switch (usually a Strowger switch) to busy it out to all accessing switches until removed, and providing automatic resets when removed from the telephone jack.

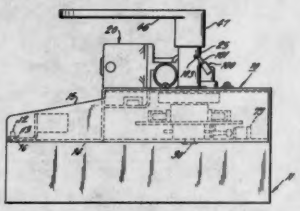
3,601,561
APPARATUS FOR APPLYING AN IDENTIFYING SIGNAL TO A TELEPHONE-LINE PAIR WITHOUT DISTURBANCE OF SERVICE
Richard L. Bennett, Saugus, Calif., assignor to Perkins Research & Mfg. Co., Canoga Park, Calif.
Filed May 21, 1969, Ser. No. 826,525
Int. Cl. H04m 3/26
U.S. Cl. 179—175.3 9 Claims



An apparatus for applying an identifying tone to a telephone-line pair without disturbing user service comprising a line tap, electrical signal-producing means for imposing a tone on the telephone pair, and a switch circuit connected between the tapping line and the tone-producing means and responsive to potential in the telephone pair so as to selectively connect the tone-producing means to the pair when the lines are not in use as indicated by the telephone-pair potential and capacity.

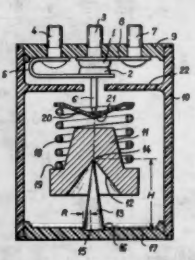
3,601,562
DEFEATER LOCK FOR ELECTRICALLY OPERATED CIRCUIT BREAKER
Carl E. Gryctko, Haddon Heights, N.J., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.
Filed Sept. 2, 1969, Ser. No. 854,512
Int. Cl. H01h 27/00
U.S. Cl. 200—42 R 7 Claims

A circuit breaker having provisions for electrically powered as well as manual operation is provided with a coupling mechanism that is selectively operable to connect the circuit breaker for manual or powered operation. The coupling mechanism is biased toward its power-operating position. Cooperating-aperture arrangement, brought into



alignment when the coupling mechanism connects the circuit breaker for manual operation, receive a padlocking arrangement for rendering the electrically powered circuit breaker inoperative.

3,601,563
SHOCK-SENSITIVE SAFETY CUTOUT DEVICE FOR AUTOMOTIVE VEHICLES
Jean-Pierre Serpette, and Francois Peroy, both of Billancourt, France, assignors to Regie National Des Usines Renault, Billancourt and Automobiles Peugeot, Paris, France
Filed Oct. 31, 1969, Ser. No. 872,897
Claims priority, application France, Nov. 7, 1968, 172911
Int. Cl. H01h 35/14
U.S. Cl. 200—61.5 6 Claims

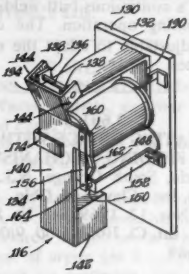


This safety cutout consists of two members enclosed in a case, the first member being an electric switch and the other a deceleration detector comprising a pivoted assembly of particularly low frictional characteristic, of which the equilibrium is disrupted by overstepping a dead center from a threshold of horizontal deceleration applied to an inertia weight associated with the electric switch and causing the automatic opening thereof.

3,601,564
INERTIA SWITCH FOR DECELERATION SIGNALING SYSTEM
Lynn E. Ellison, 44 Industrial Road, Crystal Lake, Ill.
Division of Ser. No. 571,856, Aug. 11, 1966, Pat. No. 3,501,742
Filed Jan. 12, 1970, Ser. No. 7,439
Int. Cl. H01h 35/14
U.S. Cl. 200—61.48 5 Claims

An inertia switch assembly of the type adapted for use in a signaling system for motor vehicles. The assembly includes a pair of normally open contacts disposed in circuit with an

electrically actuated device comprising an element of said system, and means for closing said contacts upon the sensing



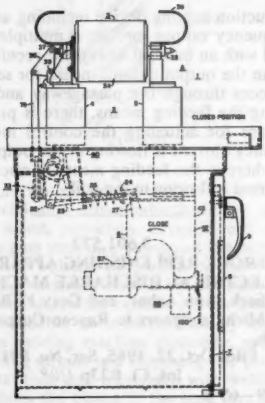
of the deceleration of the motor vehicle at a predetermined rate.

3,601,565

VACUUM CIRCUIT INTERRUPTER WITH HIGH VOLTAGE SWITCH COMPARTMENT AND LOW VOLTAGE OPERATING MECHANISM COMPARTMENT SEPARATED BY A GROUNDED METALLIC PARTITION

Robert A. Few, Bloomington, Ind., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 22, 1968, Ser. No. 730,983
Int. Cl. H01h 33/66, 33/42, 3/46
U.S. Cl. 200—144 B 9 Claims



A circuit interrupter of the vacuum type is adapted for reclosing operations and is utilized with a novel operating mechanism of simplified and easily accessible construction. The location of the vacuum interrupters in the high voltage compartment is remote from the operating mechanism and static control disposed in the low voltage compartment. The operating mechanism is of a simplified and of a low-cost construction incorporating a pair of supporting plates. The mounting of the reclosing mechanism and location of the main drive shaft results in an accessible and ultrasafe piece of interrupting equipment.

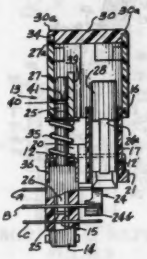
3,601,566

ELECTRICAL SWITCH APPARATUS

Eric George Hansen, Milwaukee; George Peter Piotrowski, Milwaukee, Wis., and Pradip N. Shah, Chicago, Ill., assignors to Globe-Union Inc., Milwaukee, Wis.

Filed Mar. 19, 1969, Ser. No. 808,509
Int. Cl. H01h 9/18
U.S. Cl. 200—167 A 15 Claims

Switch apparatus is provided which includes a switching device or the equivalent with a manually engageable portion having unique illuminating means. The described embodiment provides a stationary first section and a second section movable relative to the first section only upon a predetermined external force being applied thereto. The illuminating means comprises the stationary section including an electrically energizable light source and the movable section including a protective shield shrouding the light source. The shield is provided with a removable lens piece through which the light rays from the source pass when the latter is energized. The source is energized only upon alternate application of the predetermined external force on the second section.

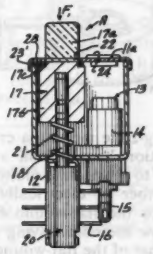


3,601,567

ILLUMINATED BUTTON SWITCH CONSTRUCTION

Pradip Shah, Chicago, Ill., assignor to Globe-Union Inc., Milwaukee, Wis.

Filed Sept. 10, 1969, Ser. No. 856,753
Int. Cl. H01h 9/18
U.S. Cl. 200—167 A 11 Claims



An illuminated button switch assembly is provided which has a self-contained light source disposed within a protective housing, and a button member carried in said housing. The button member, when in one predetermined position of actuation, has a first portion forming a wall for the light source and, when in a second predetermined position of actuation, has a second position thereof forming the wall for said light source. The light transmitting characteristics of the button member wall-forming portions are dissimilar whereby an exposed diaphanous portion of the button member is illuminated by the light source when the button member is disposed in at least one of the predetermined positions of actuation.

3,601,568

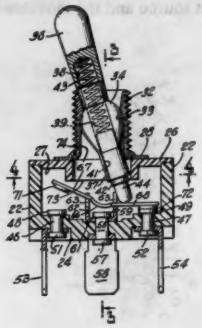
ARC-TRAPPING IMPROVEMENT FOR ELECTRIC SWITCH CASES

Wesley T. Sorenson, West Hartford, Conn., assignor to Carling Electric Inc., West Hartford, Conn.

Filed Dec. 15, 1969, Ser. No. 885,003
Int. Cl. H01h 9/02
U.S. Cl. 200—168 H 8 Claims

An electric switch case with an actuator extending through

the cover thereof and an insulating shield surrounding that portion of the toggle element in the interior of the case for



taping arc discharges formed by the opening of electrical circuits therein.

3,601,569

DEVICE FOR CRUCIBLE-FREE OR FLOATING-ZONE MELTING A CRYSTALLINE ROD, ESPECIALLY A SEMICONDUCTOR ROD

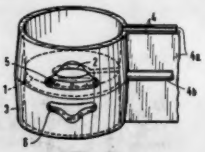
Wolfgang Keller, Pretzfeld, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Oct. 7, 1969, Ser. No. 864,360

Claims priority, application Germany, Oct. 11, 1968, P 18 02 524.6

Int. Cl. H05b *5/00, 9/02*

U.S. Cl. 219—10.43 **9 Claims**



Device for floating-zone melting a crystalline rod includes a flat-wound induction heating coil adapted to encircle a crystalline rod so as to maintain a molten zone therein, and a slotted hollow member of electrically conductive material disposed coaxially to the flat-wound coil in close coupling therewith, the hollow member having an axial length many times greater than that of the flat-wound coil.

3,601,570

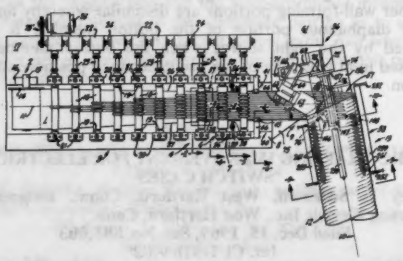
HELICAL PIPE-FORMING AND WELDING APPARATUS METHOD

Paul K. Davis, Alameda, Calif., assignor to Pacific Roller Die Company, Hayward, Calif.

Filed June 14, 1967, Ser. No. 646,089

Int. Cl. B23k *1/16, 11/08*

U.S. Cl. 219—62 **13 Claims**



Mechanism and procedure for joining, in the presence of heat and pressure, the abutting edges of a metal strip as it is formed helically into a length of cylindrical pipe. A welding head and pressure rollers are positioned at a joint-forming station to supply heat and pressure in proper amounts to insure formation of a continuous butt-welded seam in an uninterrupted edge-joining operation. The components of the mechanism are adjustable to adapt the mechanism to form pipe of varying sizes.

3,601,571

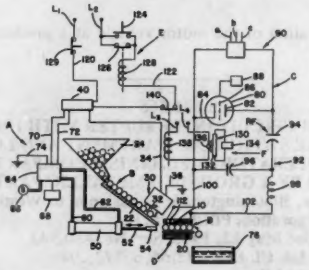
INDUCTION HEATING DEVICE WITH A CONTROLLED FEEDING MECHANISM

Edmund N. Curcio, South Orange, N.J., assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Nov. 12, 1969, Ser. No. 875,638

Int. Cl. H05b *5/00, 9/06*

U.S. Cl. 219—10.69 **2 Claims**



In an induction heating device including an oscillator with a high frequency output circuit, a multiple turn induction heating coil with an internal workpiece-receiving passageway connected in the output circuit, means for sequentially feeding workpieces through the passageway and control means for actuating the feeding means, there is provided an energizable means for actuating the control means only when high frequency current is flowing in the output circuit of the oscillator whereby the feeding means is operable only when heating current is flowing in the coil.

3,601,572

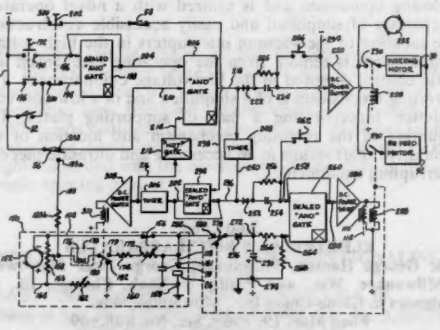
ELECTRODE-REPLENISHING APPARATUS FOR ELECTRICAL DISCHARGE MACHINING

John M. Check, Ann Arbor, and Gary F. Rupert, Ypsilanti, both of, Mich., assignors to Raycon Corporation, Ann Arbor, Mich.

Filed Oct. 22, 1965, Ser. No. 501,910

Int. Cl. B23p *1/08*

U.S. Cl. 219—69 V **15 Claims**



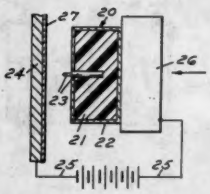
Electrical discharge machining apparatus utilizing a wire electrode and a re-feed mechanism operable to replenish the electrode following each machining pass. The mechanism includes means for sensing electrical contact between the workpiece and the electrode to determine the amount of

electrode fed after each operation of the apparatus. The apparatus also can form true holes which are larger in diameter than the electrode by employing structure for rotating a workpiece while the electrode is fed axially thereof and held obliquely to the workpiece axis.

3,601,573
FLUXLESS ARGON ARC SOLDERING
Albert J. Shutey, Warren, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Filed Oct. 13, 1969, Ser. No. 866,041
Int. Cl. B23k *1/20*
U.S. Cl. 219—85 5 Claims

A method of soldering wherein heat is supplied by striking an electric arc between a nonconsumable tungsten electrode and the work. The source for the arc is a bidirectional electric current. A stream of argon gas is supplied to the solder zone to shield the work for oxidation. The argon is conjunction with the bidirectional current provides a cleansing action in the solder zone permitting metallurgical bonding of the solder and work. The method is practiced without the aid of a flux.

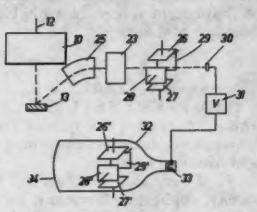
3,601,574
PART STRUCTURE FOR PROJECTION WELDING A NONMETALLIC BODY TO A METAL PART
Theodore E. Fiddler, 1268 Suffield Drive, Birmingham, Mich.
Filed Mar. 19, 1970, Ser. No. 21,057
Int. Cl. B23k *11/14*
U.S. Cl. 219—93 3 Claims



A part structure for projection resistance welding a nonmetallic or electrically non-conductivebody, such as of synthetic resin, wood, porcelain, ceramic, etc. to a metal base wherein the part structure comprises the nonconductive body, a conductive welding projection of the body, and a current conducting member carried by the body leading to the projection from a remote surface on the body; the part structure being weldable on a metal base by including the metal base and a welding machine electrode, such as press-platen, in a welding circuit and disposing the part structure between the metal base and the platen with welding current communicating from the platen to the base through the current conducting member and the projection to fuse the projection with the base.

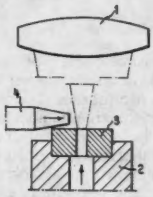
3,601,575
METHOD AND APPARATUS FOR VIEWING THE IMPACT SPOT OF A CHARGE CARRIER BEAM
Edgar Meyer, Gilching, and Joachim Geissler, Vaterstetten, both of, Germany, assignors to K. H. Steigerwald GmbH, Wasseralfingen, Germany
Continuation of application Ser. No. 473,355, July 20, 1965. This application Jan. 24, 1969, Ser. No. 804,342
Claims priority, application Germany, July 24, 1964, St 22,453
Int. Cl. B23k *15/00*
U.S. Cl. 219—121 5 Claims

A viewing system for monitoring the focus of a beam of charged particles at the impact spot in apparatus using such beam for the machining of a workpiece is described. The viewing system utilizes the charged-particle radiation moving reversely with respect to the beam from the impact spot and focuses this in an image plane. A fluorescent screen is provided in the image plane and behind the screen is a photoelectric detector having a photosensitive area smaller than the image of the particles on the screen whereby the intensity of the radiation incident upon the photoelectric device can be used an an indication of the focus of the beam



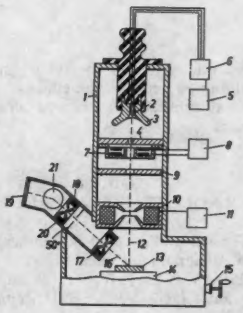
on the impact spot. Various devices are illustrated and described.

3,601,576
METHOD FOR BORING WORKPIECES BY LASER PULSES
Hans Schlafli, Buren an der Aare, and Gottfried Gugger, Steffisburg, both of, Switzerland, assignors to Laser Technique S A, Berne, Switzerland
Filed Sept. 13, 1968, Ser. No. 759,659
Claims priority, application Switzerland, Sept. 25, 1967, 13,356/67
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 L 22 Claims



A method for boring workpieces of hard material by laser pulses for obtaining the bore sizes within relatively critical tolerances. Laser pulses are used of 0.1 to 0.8 Joule, the duration not exceeding 100 μsec. and the wavelength of the pulses is arranged to exceed 1 μ.

3,601,577
METHOD AND APPARATUS FOR VIEWING THE IMPACT SPOT OF A CHARGE CARRIER BEAM
Edgar Meyer, Wessling, and Joachim Geissler, Munich, both of, Germany, assignors to Steigerwald Strahltechnik GmbH, Munich, Germany
Division of Ser. No. 804,342, Jan. 24, 1969, which is a Continuation of Ser. No. 473, 355, July 20, 1965, abandoned
Filed Jan. 20, 1970, Ser. No. 4,221
Int. Cl. B23k *15/00*
U.S. Cl. 219—121 12 Claims



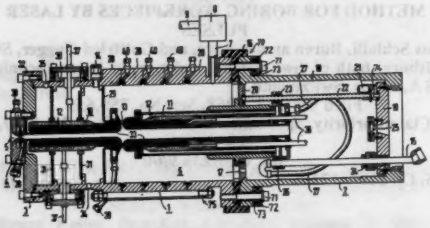
In equipment using a beam of charged particles for machining a workpiece, the size and/or shape of the beam's

impact spot is checked by placing a sharply defined edge to intercept energy radiated from the impact spot so that the radiation casts a shadow on a detection device, which is provided by a fluorescent screen of a photoelectric detector or by a combination of them.

3,601,578
HIGH-PRESSURE PLASMA BURNER

Rudolf Gebel, Tennenlohe, and Helmut Forster, Neunkirchen, both of, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Dec. 23, 1969, Ser. No. 887,578
Claims priority, application Germany, July 11, 1969, P 19 33 306.3
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 P **1 Claim**

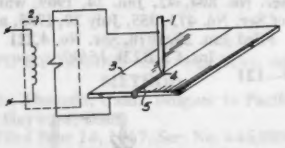


High-pressure plasma burner of the gas heater type includes a pressuretight arc chamber containing electrodes adapted to form an arc therein, flow discharge nozzle means for discharging from the arc chamber working gas heated and ionized therein by the arc, coolant channels located in parts of the arc chamber thermally stressed by the arc, the coolant channels being connected in a closed coolant loop, and a pressure transmitter and pressure line pressure transmittingly interconnecting the pressure tight arc chamber and the closed coolant loop.

3,601,579
METHOD OF WELDING METAL PARTS AND ARTICLES

Georgy Vasilievich Gorbunov, bulvar Lesi Ukrainki, 2, kv. 41, Kiev, U.S.S.R.

Filed June 14, 1968, Ser. No. 737,140
Int. Cl. B23k *9/00*
U.S. Cl. 219—137 **3 Claims**



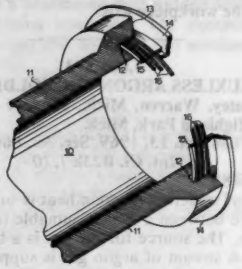
This invention relates to a method of welding wherein molten bath is maintained between the edges of a workpiece and an electrode and subsequently moved along the edges to form a weld seam.

3,601,580
HEATER ROLL TEMPERATURE DETECTOR APPARATUS

Maurice W. Cannon and Jerome B. Tankersley, III, both of Roanoke, Va., assignors to General Electric Company

Filed May 13, 1970, Ser. No. 36,894
Int. Cl. H05b *1/02*; **B21b** *27/06*
U.S. Cl. 219—505 **5 Claims**

A temperature sensor for a rotating heater roll having an annular slot cut into an end face of the roll including a non-inductive winding of temperature-responsive resistance wire upon a stationary rim inserted completely within the slot in non-contacting relationship whereby the heat of the

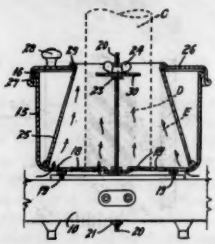


roll affects the winding to change its resistance to control and regulate the source of heat provided for the roll.

3,601,581
ELECTRIC HEATING DEVICE FOR HEATING THE EXTREMITIES OF PLASTIC PIPES

Clyde C. Cone, 7395 W. 67th Ave., Arvada, Colo.

Filed Apr. 23, 1970, Ser. No. 31,237
Int. Cl. F27d *11/00*
U.S. Cl. 219—386 **8 Claims**

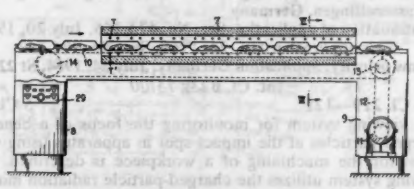


A cylindrical, open-topped, vertically walled pot with a perforated bottom adapted to be secured in spaced relation to a conventional electrical heating element so as to receive the extremity of a length of plastic pipe and support a circular air-deflecting disc therein so that air, heated by said element, will flow through the perforations in the bottom and longitudinally of both the inside and outside surfaces of said extremity to heat and soften the latter for expansive purposes.

3,601,582
APPARATUS FOR REHEATING PORTIONS OF COOKED FOOD

Jean De Boisfleury, Plombieres-les-Bains, France, assignor to Iseco S. A., Plombieres-les-Bains, France

Filed July 23, 1969, Ser. No. 843,933
Claims priority, application France, July 24, 1968, 160 407
Int. Cl. F27b *9/06*
U.S. Cl. 219—388 **12 Claims**



An apparatus for reheating cooked food portions, having an oven, electric infrared ray emitters mounted within said oven, containers for accommodating the food portions and support means within said oven for holding said containers.

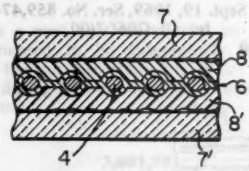
These emitters are encased tubes arranged to form heating grills and placed above and below the containers. The heating is in the form of a timed heating cycle with periods of heating when the containers are subjected to the heating effect of the emitters and at least one stabilization period in which the intensity of heating is reduced to equlize the temperature prevailing inside the containers.

3,601,583

ELECTRICAL HEATING WIRE ASSEMBLY FOR INCORPORATION IN WIRED LAMINATED GLASS PANELS

Yasuharu Fujiwara, Kanagawa-ken, Japan, assignor to Nippon Sheet Glass Co. Ltd., Osaka, Japan

Filed Apr. 11, 1969, Ser. No. 815,435
Int. Cl. H05b *3/06*
U.S. Cl. 219—522 **3 Claims**



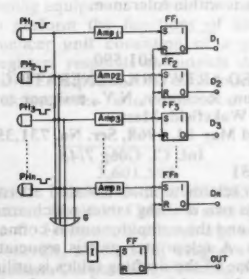
An electrical heating wire assembly for incorporation in a wired laminated glass panel, comprising an array of closely spaced parallel electric heating wires sandwiched between two sheets of films which are not adhesive to the cement to be used for bonding a pair of glass sheets forming said laminated glass panel one and at least one of the firms of which has said cement coated on the inside face thereof to secure the individual electrical heating wires in positions integrally therewith, said electrical heating wire assembly being used in such a manner that after removing the two sheets of films, the array of electrical heating wires carried by the cement layer is positioned on the inside face of one of said pair of glass sheet and the other one of the glass sheets is positioned on said array of electrical heating wires with the same cement interposed therebetween, whereby the two glass sheets are bonded together with the array of heating wires incorporated therein.

3,601,584

DEVICE FOR READING PUNCHED CARDS

Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Apr. 23, 1968, Ser. No. 723,484
Claims priority, application Japan, May 15, 1967, May 16, 1967, May 18, 1967, May 24, 1967, 42/30,395;42/40,318;42/41,170;42/32,537
Int. Cl. G06k *7/016*
U.S. Cl. 235—61.11 E **3 Claims**



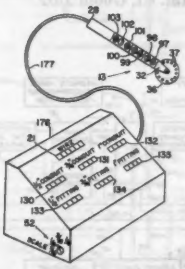
A programming system for an electronic computer using a card-reading device, said reading device having a card passageway adapted to feed punched cards by allowing descent of the card therethrough by gravitation. The information stored in each punched card is read by a photoelectric means while each punched card descends by gravity through the card passageway of the card-reading device.

3,601,585

METHOD AND APPARATUS FOR TOTALIZING MATERIALS FROM CONSTRUCTION DRAWINGS

Dan B. Paulsen, 36505 Oak St., Fremont, Calif.

Filed Sept. 18, 1968, Ser. No. 760,527
Int. Cl. G06m *1/272, 3/02*
U.S. Cl. 235—92 DN **6 Claims**



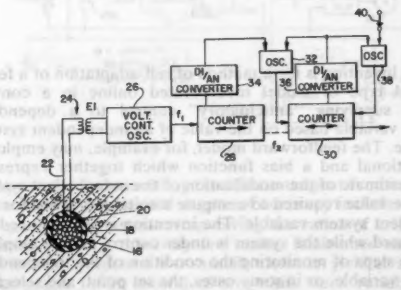
In order to accumulate the total amount of required electrical materials for estimating the cost of electrical facilities for a designed building, the length of all conduit runs obtained from a sealed electrical construction drawing are converted into a proportional number of electrical pulses by a rotameter. Each pulse thereby provided is employed to generate a selected multiple number of pulses by appropriately gating the output of a high frequency pulse generator wherein the number of pulses thus gated is selected to be proportional to the number of conductors carried by each conduit run. The resulting gated pulses are accumulated by a pulse counter accumulator which thereby registers a number proportional to the total conductor length for all of the conduit runs displayed by the construction drawing. In addition to the accumulation of conductor lengths, method and apparatus are disclosed for totalizing the conduit length for each conduit size and for totalizing the number and size of conduit fittings by similar pulse generating, gating and counting operations.

3,601,586

THERMAL CALCULATOR

Peter E. Slavin, Winchester, Mass., assignor to Intelligent Instruments, Inc., Winchester, Mass.

Filed Feb. 28, 1969, Ser. No. 803,289
Int. Cl. G06m *3/08*
U.S. Cl. 235—92 MT **3 Claims**



A digital thermal calculator is provided for use particularly in the prediction and display of the temperature of electrical cables, especially the conductor temperature(s) of un-

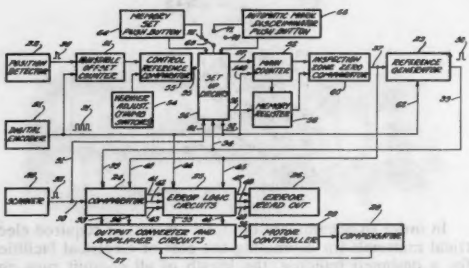
derground cables. Large currents which give power (thermal units) into the cable(s) are converted by transducers into a useable voltage, which is fed to a voltage-controlled oscillator. The output of the oscillator is fed into a reversible counter and the count in the counter represents temperature at some portion of the cable. Additional up/down counters and voltage-controlled oscillators are connected to represent heat flow between different points in the thermal system.

3,601,587

REGISTER CONTROL SYSTEM AND METHOD

Paul W. Thiede, Danville, Ill., assignor to Hurletron Incorporated, Danville, Ill.

Filed Oct. 6, 1969, Ser. No. 863,876
Int. Cl. G06m *3/02*
U.S. Cl. 235—92 CC **4 Claims**



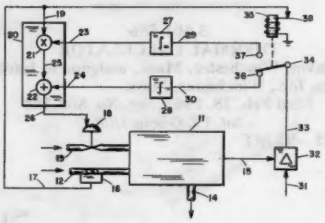
A digital control system for controlling register of a moving web at successive stations wherein the set point at each station is automatically obtained and stored while the web is running in the desired register condition.

3,601,588

METHOD AND APPARATUS FOR ADAPTIVE CONTROL

Edgar H. Bristol, II, Foxboro, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Filed May 23, 1966, Ser. No. 552,288
Int. Cl. G05b *13/00*
U.S. Cl. 235—150.1 **37 Claims**



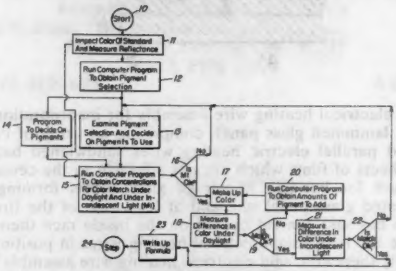
The invention is for a method of self-adaptation of a feedforward type of model incorporated online in a control system supplying "anticipatory" control to a dependent system variable based on the value of an independent system variable. The feedforward model, for example, may employ a proportional and a bias function which together express a linear estimate of the modification of the independent system variable value required to compute a suitable control for the dependent system variable. The invention is for a procedure performed while the system is under control action, employing the steps of monitoring the condition of the independent system variable, or in some cases, the set point, and selecting in accordance therewith one of the feedforward model functions for an adjustment, which adjustment uses the system error signal in a feedback loop type of control action in order to reduce that error. Each such selection, together with the adjustment performed, acts to improve the model's estimate of the proper relationship between the value of the independent system variable and the value of the dependent system variable. Over a period of time, as the independent variable changes, several successive selections and adjustments will be made, and the model will express the best possible estimate, whether the model is a simple linear model, or is made to represent a more complex group of functions. The invention also includes apparatus for carrying out the adaptation. Applications are also included where the model is employed in other than the conventional feedforward control situations, the adaptation feature of the invention providing for automatic calibration of measurements, and for on-off control activity, for example.

3,601,589

PROCESS AND APPARATUS FOR PRODUCING COLORED CHEMICAL COATINGS

William H. McCarty, Hunterdon, N.J., assignor to Mobile Oil Corporation

Filed Sept. 19, 1969, Ser. No. 859,474
Int. Cl. G06f *7/00*
U.S. Cl. 235—150 **25 Claims**



A computer-aided color formulation process is provided wherein a color standard is matched by a blend of pigments from a library of pigments. Reflectance values of the standard color at a plurality of reflectance points are supplied to a computer programmed to select pigments from the library and to approximate concentrations of the selected pigments to give a match to the reflectance data of the standard. The computer is also programmed to generate the pigment composition from a group of those selected to match the color of the standard, and to determine the metameric index of the match. The color of a blend of library pigments prepared in response to the concentration values generated by the computer is measured by a colorimeter under daylight to insure that the difference in color coordinates between the blend and the standard is within tolerance. If the color coordinate difference is not within tolerance, the process provides for determining the amount of selected pigment addition necessary to shade the blend to provide a color coordinate difference within tolerance. The blend is then measured by the colorimeter under incandescent light to insure that the metameric index is within tolerance.

3,601,590

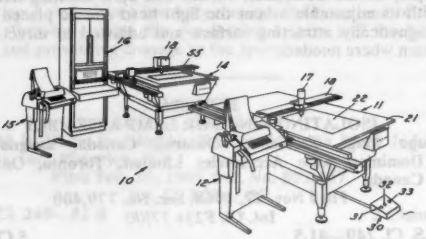
AUTOMATED ARTWORK-GENERATING SYSTEM

Wayne G. Norton, Rochester, N.Y., assignor to Rutledge Associates, Inc., Wakefield, Mass.

Filed May 14, 1968, Ser. No. 731,356
Int. Cl. G06g *7/48*
U.S. Cl. 235—151 **9 Claims**

This invention relates to an automated artwork-generating system which has two drafting tables which are connected to a computer unit and the computer unit is connected with two teleprinter units. A teleprinter unit is associated with each drafting table. One of the drafting tables is utilized as a coordinate readout table and has a dotting mechanism positioned on a slide mechanism which sends signals into the computer unit to be directed to either the second automatic drafting table or to its associated teleprinter to produce a tape for future use. The second teleprinter unit is utilized to read the

tape produced by the first teleprinter unit and feed the information into the computer unit so that the artwork can be reproduced by the second drafting table by a rotary tool mechanism provided on its slide mechanism. The artwork is



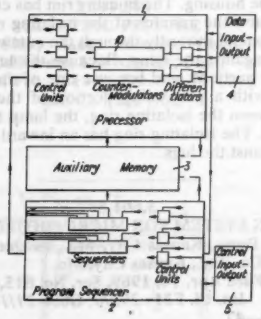
produced on a peel coat master mat by a knife member which is oriented to be substantially aligned with the direction of the cut movement the rotary tool mechanism must follow during performance of its function on the peel coat master mat.

3,601,591

DIGITAL DIFFERENTIAL ANALYZER EMPLOYING COUNTERS CONTROLLED BY LOGIC LEVELS

Brian Ronald Gaines, Cambridge, and Peter Lawrence Joyce, Bishops Stortford, both of, England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 12, 1968, Ser. No. 752,060
Claims priority, application Great Britain, Aug. 17, 1967, 37851/67
Int. Cl. G06f *7/50, 7/52*
U.S. Cl. 235—152 **6 Claims**



Data processing equipment wherein the registers are interconnected to perform the functions of analog computing loops, a sequencer unit consisting of a plurality of programmable registers responds to outputs derived from the processor, and the outputs of the sequencer registers being arranged to control the interconnection patterns in the processor.

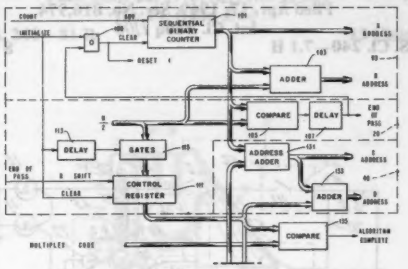
3,601,592

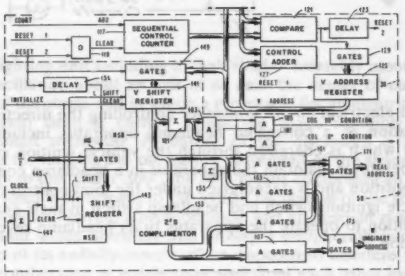
FAST FOURIER TRANSFORM ADDRESSING SYSTEM

Joseph T. Cutter, Boulder, Colo.; Walter H. Elder, Silver Spring; Don G. Freeman, Gaithersburg, and Richard Van Blerkom, Rockville, all of, Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 15, 1970, Ser. No. 28,892
Int. Cl. G06f *7/00, 7/38*
U.S. Cl. 235—156 **9 Claims**

A fast Fourier transform addressing system using the Danielson-Lanczos algorithm. The addressing system uses a basic relationship between addresses to allow implementation of the addressing system using a reduced number of address





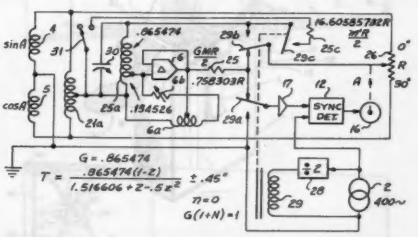
counters and reduced storage requirements for system constants.

3,601,593

INVERSE TANGENT GENERATOR

Frank S. Preston, Fairfield, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Sept. 4, 1968, Ser. No. 757,227
Int. Cl. G06g *7/26*
U.S. Cl. 235—179 **23 Claims**

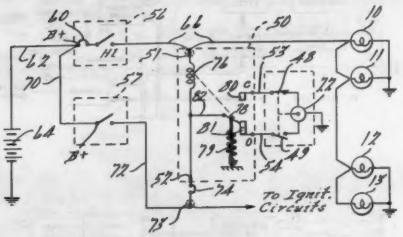


Apparatus for generating the inverse tangent function from 0° to 360° to any desired degree of accuracy includes means for mechanizing equations involving the ratios of arithmetic quantities having relatively few terms. Resistance networks may be employed; and two variable elements yield an accuracy of nearly 0.001 second of arc, while three variable elements yield an accuracy better than 2×10^{19} second of arc. Time-sharing permits these accuracies to be obtained with only one variable element. The tangent function may also be generated with corresponding accuracy within a region extending from 0° to somewhat less than 90°.

3,601,594
CIRCUIT CONTROLLER FOR CONCEALED HEADLAMP ACTUATOR APPARATUS

Leonard A. Carbary, Fraser, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Apr. 17, 1969, Ser. No. 816,974
Int. Cl. B60q 1/06
U.S. Cl. 240—7.1 H 8 Claims

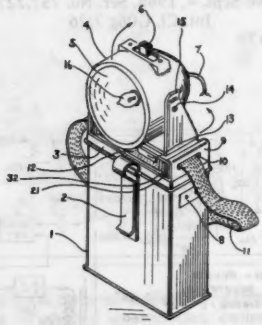


An electrical circuit controller controlling the direction of actuation of a concealed headlamp apparatus including a relay which is energized through the vehicle ignition switch to operate or maintain the apparatus in a headlamp concealing position and is deenergized under the joint control of the vehicle ignition switch and headlamp switch in their enabled condition to operate the apparatus to its headlamp revealing position.

3,601,595
FLASHLIGHTS

Stanley Edward Kivela, Rte 1, Box 94, Marengo, Wis.

Filed Jan. 10, 1968, Ser. No. 696,760
Int. Cl. F21l 23/00
U.S. Cl. 240—10.6 11 Claims

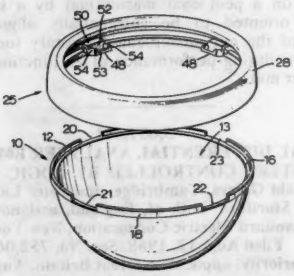


A portable flashlight-lantern with an adjustable and detachable mount means for a light emitting head allowing use of light in several ways. When attached to, and used with the better case it can be used as a regular hand held flashlight or it can be clipped to user's trouser belt or in shirt pocket. The adjustable mount allows directing the beam of light where needed. Also, a neck and/or head strap is provided so the unit can be suspended by this strap, like a camera, leaving the user's hands free. The light emitting head, with its adjustable mounting, can be detached from the battery case and used as a head lamp, strapped to the user's head, cap, or hat. An extension cord allows the battery case to be clipped to user's trouser belt, shirt or coat pocket. In other user situations the light emitting head can be placed remotely from battery case into cramped locations and the like. Magnets are a part of the detachable mount and light emitting head so with its adjustable mount the light head can be placed on a magnetically attracting surface and adjusted to direct light beam where needed.

3,601,596
ISOLATING RING FOR LAMP ASSEMBLY

Hugo Magi, Etobicoke, Ontario, Canada, assignor to Dominion Auto Accessories Limited, Toronto, Ontario, Canada

Filed Nov. 27, 1968, Ser. No. 779,400
Int. Cl. F21v 17/00
U.S. Cl. 240—41.5 5 Claims

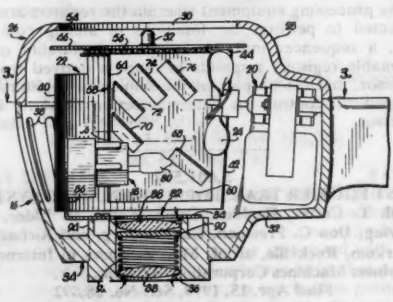


An isolating ring for isolating a lamp from a circular rimmed housing. The isolating ring consists essentially of a resilient annular which has an internal gallery for receiving the rim of the housing. The housing rim has cutaway portions at intervals and the annulus of the isolating ring has integral lugs which extend inwardly through the cutaway portions and which bear against the lamp. Because the lugs register with the cutaway portions, and because one of the lugs is shaped to register with a protruding portion of the lamp, relative shifting between the isolating ring, the lamp and the housing is prevented. The isolating ring has an inward lip which urges the lamp against the lugs.

3,601,597
COOLING SYSTEM FOR MICROPROJECTOR HEAD

Thomas M. Dunn, Kansas City, Mo., assignor to Ken-A-Vision Mfg. Co., Inc., Kansas City, Mo.

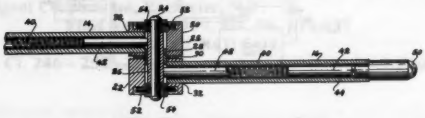
Filed Apr. 14, 1969, Ser. No. 815,884
Int. Cl. F21v 29/00; G03b 21/16
U.S. Cl. 240—47 6 Claims



A cooling system for a microprojector head which has a high intensity, heat-emitting light source, the cooling system

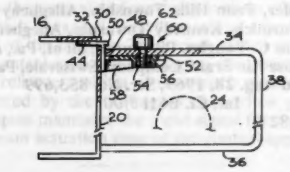
including a blower spaced from the light source, a sleeve embracing the light source and the blower, there being a plurality of baffles carried by a frame disposed within the sleeve and means for permitting air to enter the sleeve from around the lenses and the mount therefore whereby the heat emitted from the light source is directed out of the head and dispelled while cool air is drawn inwardly through the lower end of the head, thereby cooling the condensing system and the heat filter and preventing damage to the specimen.

3,601,598
ADJUSTABLE LAMP
Donald N. Horn, Huntington, N.Y., assignor to Vicon Industries, Inc., Plainview, N.Y.
Filed Feb. 25, 1969, Ser. No. 802,107
Int. Cl. F21s *1/12*
U.S. Cl. 240—52 R **3 Claims**



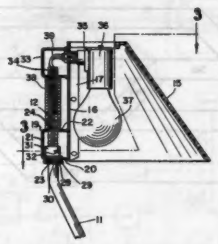
A lamp having a plurality of tubes connected at joints which permit full rotation adjustment while maintaining electrical continuity from a plug source at one end to a light bulb at the opposite end. Each joint has two cylinders rotatably coaxially joined by a rivet with a conducting sleeve. Each tube has a central contact which is spring-urged against the sleeve to provide a part of the circuit. The tubes and cylinders provide the remainder of the circuit and are insulated from the contacts and sleeves.

3,601,599
LIGHTING FIXTURE
Mark Eugene Sink, Santa Monica, Calif., assignor to Lightcraft of California, Los Angeles, Calif.
Filed Feb. 7, 1969, Ser. No. 797,445
Int. Cl. F21s *1/02*
U.S. Cl. 240—73 R **6 Claims**



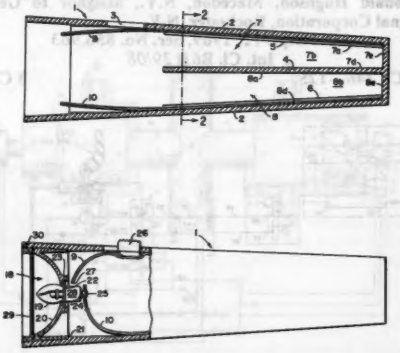
A lighting fixture having a removable glass cover pivotally linked to a wall mounted holder is disclosed. The pivotal linkage is in the form of a unitary rigid member preferably formed of a rigid but compressible synthetic resin such as nylon which has a forwardly extending portion removably fastened to the top wall of the glass cover and includes a spaced rearwardly extending flange and an intermediate portion joining the fastening section with the flange. The flange is insertable into a slot provided at the intersection of the top and front wall of the lamp fixture. The flange bears against the inner top wall and the bottom edge of the slot of the fixture while the intermediate portion bears against the front wall of the fixture which provides a cantilevered support of the cover in a first closed position. On rotation of the cover upwardly the flange pivots and rotates into engagement with the front wall of the fixture in a second open position. In the open position access to the sockets, bulbs and the inside of the cover is permitted.

3,601,600
LIGHTING UNIT
William P. Cannon, Elwood, Ind., assignor to Cannon Products, Incorporated, Elwood, Ind.
Filed Mar. 23, 1970, Ser. No. 21,922
Int. Cl. B44d *3/64*
U.S. Cl. 240—81 R **13 Claims**



A lighting unit including a "half shade" assembly mounted for oscillation about an axis at or near the center of curvature of the shade and in which a receptacle for an electrically energized lamp is carried within the shade assembly for movement therewith. A feature of the disclosure is stop means for limiting the oscillatory movement of the shade assembly to just under 360°, the stop means comprising an element fixed with respect to the axis of oscillation of the shade assembly and having a protuberance, and an element moving with said shade assembly and having a peripherally-narrow region of its radially-inner surface disposed to interfere with the protuberance at points separated from each other by approximately 350° of shade assembly oscillation.

3,601,601
BATTERY ENCASED IN A FUNCTIONAL UNIT
Stanley D. Eilenberger, Middletown, Conn., assignor to Progressive Products Corporation, Kensington, Conn.
Filed July 24, 1969, Ser. No. 844,592
Int. Cl. F21l *7/00*
U.S. Cl. 240—10.61 **23 Claims**

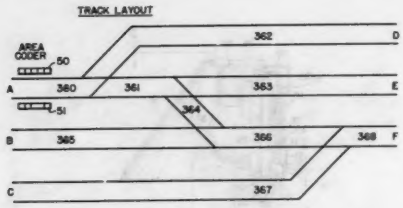


A disposable electric device, such as a flashlight, which includes a casing having one or more battery compartments; an electrode overlay, such as zinc, on one or more compartment surface; another electrode overlay, such as carbon, on another surface; a serial or parallel electric connection between the compartments; a battery mix; operative electrical elements of the device, such as a bulb and lens assembly, in connection with the electrodes; and sealing means for the device.

3,601,602
SYSTEM FOR MONITORING TRAIN OPERATION

Willis R. Smith, Rochester, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed July 24, 1969, Ser. No. 844,350
Int. Cl. B61l 25/02
U.S. Cl. 246—124 17 Claims

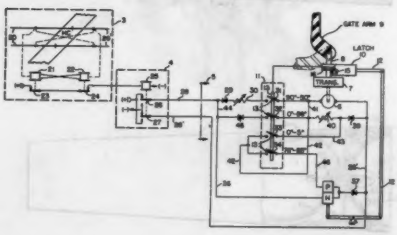


Monitoring apparatus is located on each locomotive which apparatus is distinctively actuated each time that locomotive passes a track switch in the track layout. Such actuation is dependent upon whether the locomotive passes the track switch in its normal or reverse position. The elapse of time also acts on the monitoring apparatus together with the change in the direction of locomotive movement. These distinctive conditions stored in the locomotive monitoring apparatus are fed into a computer which compares the recorded locomotive movements with a standard of operation for that area of railroad and gives a written record of the actual locomotive performance. In the event the actual performance deviates substantially from a standard of performance, such difference is printed on the written record to be brought to the attention of the operator of the locomotive as well as his management. In a modified form of the invention, the conditions detected on the locomotive are transmitted to the central office in real time and are supplied to the computer for immediate processing. The computer in addition to supplying a typed record of performance also provides control of a currently updated display panel for showing the route and times of locomotive movement.

3,601,603
CROSSING GATE CONTROL CIRCUIT

J. Donald Hughson, Macedon, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed Sept. 11, 1969, Ser. No. 856,963
Int. Cl. B61l 29/08
U.S. Cl. 246—125 3 Claims

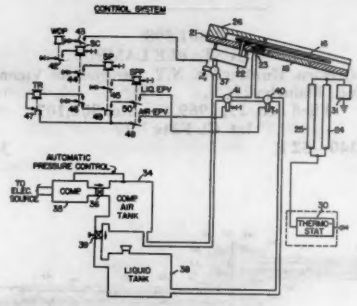


A control system for a highway crossing gate has been provided having circuit means for selectively operating the gate to open and closed positions when a signal of one or another polarity is present respectively. The improvement for providing directional control of the gate includes a plurality of polarity sensitive devices for selectively including or not including a resistor in the operating circuit of the gate in accordance with the polarity of the signal impressed on the operating circuit.

3,601,604
HOT BOX DETECTOR STRUCTURES FOR RAILWAYS

Henry C. Sibley, Adams Basin, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed July 16, 1969, Ser. No. 842,319
Int. Cl. B61k 9/06; B08b 3/00
U.S. Cl. 246—169 D 11 Claims

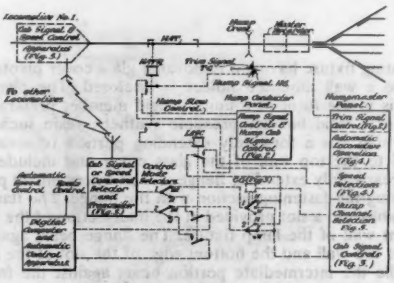


The hot box detector structure comprises a main enclosure and an upper deck enclosure. The main enclosure houses the radiometer which should be maintained at ambient temperature. For this reason, the upper deck enclosure is separated from the main enclosure by a suitable air space. It also supports a surrounding sun shade to further protect the main enclosure of the structure from the direct rays of the sun and thus prevent the building up of its internal temperature above the ambient. The tower enclosure rises from one end of the main enclosure and includes a window at its top or head through which the radiometer can view the passing hot elements of a moving train. The head of such tower also includes certain operative parts such as a shutter for the window, heating elements, shutter control, window washer and dryer, and the like. This head of the tower is heat insulated from the tower supporting structure and from the main enclosure.

3,601,605
CAB SIGNAL AND SPEED CONTROL FOR LOCOMOTIVES

John Calvin Elder, Penn Hills Township, Allegheny County; William C. Kuzmich, Kennedy Township, Allegheny County, and Thomas C. Vaughn, Pittsburgh, all of, Pa., assignors to Westinghouse Air Brake Company, Swissvale, Pa.

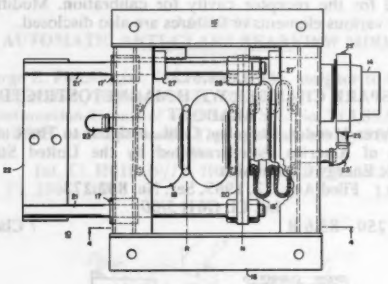
Filed Aug. 28, 1969, Ser. No. 853,699
Int. Cl. B61l 3/00
U.S. Cl. 246—182 R 11 Claims


Locomotive No. 1
Cab Signal & Speed Control Apparatus (Fig. 5)
To other Locomotives
Hump Crest
Master Retarder
Hump Signal Control (Fig. 7)
Hump Retarder Panel
Automatic Locomotive Operation (Fig. 4)
Speed Detection (Fig. 3)
Hump Control Selection Fig. 6
Cab Signal Control (Fig. 5)
Digital Coupler and Automatic Control Apparatus
Logic

Each locomotive in a railroad classification yard area is provided with both cab signal and automatic speed control apparatus, each element controlled at different times from a

remote location. The cab signal or speed commands are transmitted to a locomotive by one or a combination of selected tone signals modulated on a carrier signal. Remote control of all cab signals may be by the humpmaster but normally one locomotive is assigned to humping operations and control of its cab signal transferred to the hump conductor. Remote automatic speed control can be established on a locomotive only when it is assigned to humping operations. That locomotive speed control apparatus is then controlled by transmitted tone combinations corresponding to speed selections made by the humpmaster. The locomotive engineer must acknowledge a received automatic operation request in order to establish the remote control condition on the locomotive. The engineer retains an ability to restore local onboard control at any time and has final control of reestablishing automatic operation after any interruption.

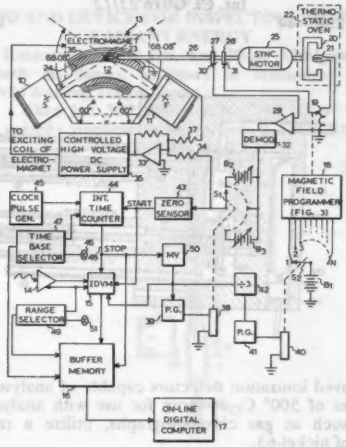
3,601,606
AIR BAG SWITCH MACHINE
Raymond G. Cook, Rochester, N.Y., assignor to General Signal Corporation, Rochester, N.Y.
Filed Nov. 6, 1969, Ser. No. 874,437
Int. Cl. B61l *5/04*
U.S. Cl. 246—258 **7 Claims**



A trailable switch machine has been provided wherein a switch machine mechanism actuates a set of railroad switch points reciprocally to normal and reverse positions. A control means selectively actuates the mechanism to the desired position in accordance with an input signal. The control means comprises means magnetically responsive to the position of the switch rails including a magnet laterally disposed relative to the normal and reverse positions of the switch rails and a switch means disposed so as to cooperate with the proximity of the magnet. The switch means selectively actuates the control means for changing the position of the rails when the relative position of the switch means and the magnet is altered by the trailing of the switch points. Energy storage means maintains the input signal for a period relative to a minimum actuation time of the control apparatus.

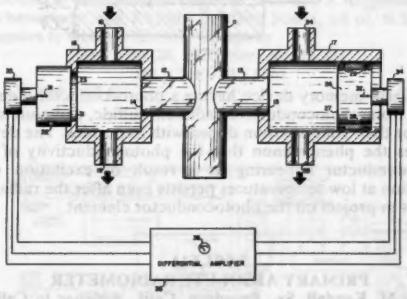
3,601,607
STEP-SCANNING SYSTEM FOR MASS SPECTROMETER
Gerald J. Wasserburg, Altadena; Curtis A. Bauman, La Crescenta; Emil V. Nenow, La Crescenta, and Dimitri A. Papanastassiou, Pasadena, all of, Calif., assignors to California Institute of Technology, Pasadena, Calif.
Filed June 13, 1969, Ser. No. 833,069
Int. Cl. B01d *59/44*
U.S. Cl. 250—41.9 D **15 Claims**

A single-focusing, 60° sector magnet mass spectrometer constructed with symmetric conjugate foci calculated from fringe field data and corresponding to a beam deflection of 68° is provided with a programmable magnetic field to step scan spectral lines and "zero" lines on both sides of each spectral line. A rotating coil probe in the magnetic field, and a stationary coil around a magnetic pole face used to provide the field, are employed as field magnitude and time-rate-of-change sensors for a current nulling system. The nulling system cooperates with an automatic step-scan programmer to set the magnetic field to 3N values, where N is the number of spectral lines to be step scanned, and the successive values correspond to the centers of spectral lines and "zeros" on both sides of each spectral line. The programmer selects a reference voltage for each spectral line which is compared with an induced voltage in the rotating coil. The difference drives the electromagnet power supply to rapidly change the field. The change induces a rate signal in the stationary coil



to produce a damping signal for the nulling system. At each step, a data acquisition system records in digital form a value proportional to ion current, scale factor, and the integrating time for that value to be developed through an integrating digital voltmeter. A computer then receives the data for later analysis.

3,601,608
ABSOLUTE HUMIDIOMETER
Dwight L. Randall, Arlington; William W. Campbell, Jr., Springfield, Va., and Franklin H. Harris, Accokeek, Md., assignors to The United States of America as represented by the Secretary of the Navy
Filed Mar. 6, 1969, Ser. No. 804,877
Int. Cl. G01n *23/12*
U.S. Cl. 250—43.5 MR **4 Claims**



An instrument for measuring absolute humidity by comparing the attenuation of Lyman-alpha radiation through a reference chamber containing a dry gas with the attenuation through a sample chamber containing moist gas. The optical path lengths of the two chambers are matched by varying the length of the sample chamber. The outputs of the respective nitric oxide detectors, which measure the intensity of radiation transmitted through the chambers, are compared directly by a differential amplifier circuit to provide an output indicative of the absolute humidity of the sample.

3,601,609

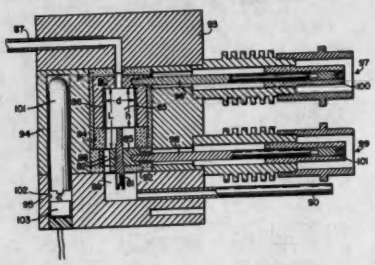
IONIZATION DETECTION DEVICE USING A NICKEL-63 RADIOACTIVE SOURCE

William L. Yauger, Jr., Baton Rouge, La., assignor to Tracor, Inc., Austin, Tex.

Continuation of application Ser. No. 497,099, Oct. 18, 1965, now abandoned. This application Sept. 19, 1969, Ser. No. 863,672

Int. Cl. G01n 23/12

U.S. Cl. 250—44 12 Claims



Improved ionization detectors capable of analyses at temperatures of 500° C. or more for use with analysis instruments such as gas chromatographs, utilize a radioactive source of nickel-63.

3,601,610

SIGNAL MEMORY DEVICE

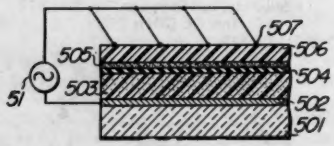
Tadao Nakamura, Kawasaki-shi; Shigeaki Nakamura, Kawasaki-shi, and Tadao Kohashi, Yokohama, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 12, 1968, Ser. No. 774,715

Claims priority, application Japan, Nov. 20, 1967, Nov. 20, 1967, 42/75023;42/75024

Int. Cl. G01n 21/38

U.S. Cl. 250—71 3 Claims



A signal memory device having a photoconductor element made from photoconductive cadmium sulfide, cadmium selenide or their solid solution doped with impurities. The device utilizes the phenomenon that the photoconductivity of the photoconductor appearing as a result of excitation with radiation at low temperatures persists even after the radiation ceases to project on the photoconductor element.

3,601,611

PRIMARY ABSOLUTE RADIOMETER

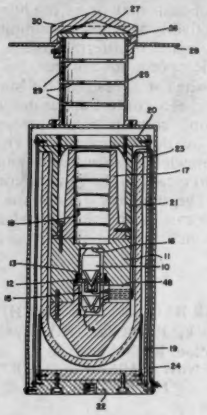
James M. Kendall, Sr., Pasadena, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Aug. 11, 1969, Ser. No. 848,880

Int. Cl. G01t 1/16

U.S. Cl. 250—83.3 H 19 Claims

A radiometer is disclosed for use in either ambient atmospheric air or a vacuum environment having a black body receptor cavity in a massive heat sink enclosed in a Dewar Flask. A view limiting tube outside a housing is provided with baffles, as is a muffler inside the housing, to protect the cavity from effects of wind. A compensating cavity or mass of thermal capacity is connected to the heat sink via a flange by a thermal resistance equal to a thermal resistance connecting the receptor cavity to the flange. Cold junctions of a thermopile are connected to the receptor cavity. A heating coil is provided for the receptor cavity for calibration. Modifications for various elements or features are also disclosed.



3,601,612

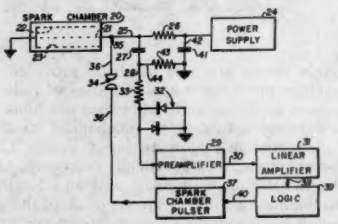
WIRE SPARK CHAMBER WITH MAGNETOSTRICTIVE READOUT

Victor Perez-Mendez, Berkeley, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Aug. 22, 1969, Ser. No. 852,273

Int. Cl. G01t 5/00

U.S. Cl. 250—83.6 R 7 Claims



A wire spark chamber having magnetostrictive readout. One embodiment thereof is for particular use with low energy gamma rays, X-rays, or neutral particles whose presence is detected by secondary particles produced in converters placed in or around the wire planes of the chamber. Another embodiment has a very large and uniformly sensitive detecting area by means of auxiliary conducting planes which serve to charge the chamber capacity with a low impedance transmission-line characteristic. The embodiment for use with low energy gamma, X-ray or neutral particles has utilization in the field of medical diagnostics while the large chamber embodiment provides the capability of detecting multiple tracks with uniform high efficiency, thus fulfilling a long looked for need in the field of wire spark chambers.

3,601,613

PHOTOELECTRIC APPARATUS FOR DETERMINING THE DISPLACEMENT OF AN OBJECT

Fromund Hock, Wetzlar, Germany, assignor to Ernst Leitz GmbH, Wetzlar, Germany

Filed Mar. 5, 1970, Ser. No. 16,776

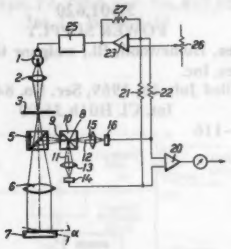
Claims priority, application Germany, Mar. 10, 1969, P 19 11 956.3

Int. Cl. G01j 1/32; G01b 11/26

U.S. Cl. 250—205 15 Claims

In a photoelectric apparatus for determining the displacement of an object the image of a slit is projected onto a

reflector attached to the object. A beam splitter is arranged for dividing the reflected image into two equal portions and for directing the portions into two different reception channels. Photoelectric receivers are associated with each reception channel which receivers are responsive to the intensity



of the light impinging thereon. A summing amplifier and a differential amplifier are connected to the photoelectric receivers and are interconnected with one another for producing an output signal when the object is displaced; the amplitude of the signal corresponding to the displacement of the object.

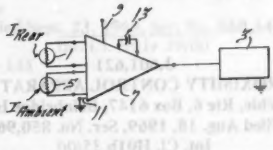
3,601,614
AUTOMATIC ANTI-GLARE REARVIEW MIRROR SYSTEM

George E. Platzer, Jr., Southfield, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Continuation-in-part of application Ser. No. 713,883, Mar. 18, 1968, now abandoned. This application May 25, 1970, Ser. No. 40,446

Int. Cl. H01h *39/12*; **H01j** *47/24*; **H03k** *3/42*

U.S. Cl. 250—209 **11 Claims**



Control circuit and system for changing an automotive rear view mirror between a day and a night reflective condition. The circuit includes a forwardly facing photocell for sensing ambient illumination and a rearwardly facing photocell for sensing the illumination on a mirror from the headlights of a following vehicle.

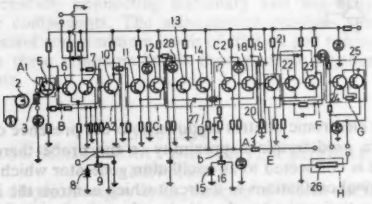
3,601,615
ELECTRIC APPARATUS FOR DETECTING MINUTE VARIATION IN TIME-FUNCTIONAL LUMINOUS ENERGY

Seizi Maeda, 5-19 Kida-cho, Neyagawa-shi, Osaka, Japan

Filed Oct. 9, 1969, Ser. No. 865,072

Int. Cl. H01j *39/12*

U.S. Cl. 250—214 R **3 Claims**



Time-functional variations in the thickness of a lengthwisely advancing linear article are photoelectrically sensed in succession and converted into an electrical signal for actuating a terminal mechanical means operative for the article's advancing system, which signal is passed through a system substantially including a differential amplifier, a waveform converter, an integrator, a differentiator and a monostable circuit, connected in this order. The resultant electrical signal may be negatively fed back for control of the luminous source for better stabilization of an amplifier circuit.

3,601,616
METHOD AND DEVICE FOR INSPECTING BOTTLE BY RADIANT ENERGY

Takuma Katsumata, Aichi-ken, and Hisao Kishigami, Gifu-ken, both of, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 30, 1969, Ser. No. 795,229

Claims priority, application Japan, Feb. 2, 1968, 43/6051

Int. Cl. G01n *21/22*

U.S. Cl. 250—223 **3 Claims**

A method of inspecting bottles comprises directing diffused light rays on bottles to be inspected and scanning the bottles thus irradiated. The bottles, in each of which an optical system with a light receiving unit is inserted, are rotated for scanning.

A device for inspecting bottles is provided with a rotary turret, on which a plurality of bottle supports are rotatably and vertically movably arranged at regular angular intervals, irradiating units, optical systems with light receiving units arranged so as to enter into the bottles, and transducers for converting light signals received by the optical systems into electrical signals.

The use of diffused light rays makes it possible to eliminate the lens action of the bottle wall and to detect solely foreign particles or substances attached on the bottle walls.

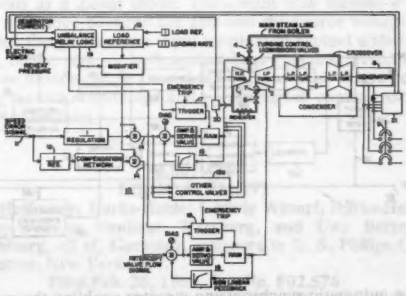
3,601,617
TURBINE CONTROL SYSTEM WITH EARLY VALVE ACTUATION UNDER UNBALANCED CONDITIONS

Francisco P. De Mello, Burnt Hills; Markus A. Eggenberger, Schenectady, and Richard J. Mills, Scotia, all of, N.Y., assignors to General Electric Company

Filed May 28, 1970, Ser. No. 41,271

Int. Cl. F01d *21/00*

U.S. Cl. 290—40 C **10 Claims**



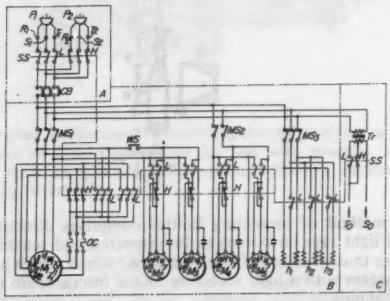
A large steam turbine-generator control system with normal valve positioning systems for speed and load control and fast valve closure systems for turbine overspeed control,

wherein the system also includes early valve actuation relay logic designed to function upon logical combinations of unbalance and time-rate-of-change of unbalance of selected turbine-generator measured operating conditions such as mechanical input power, electrical load and generator terminal current.

3,601,618
REFRIGERATOR UNIT USED FOR A FREIGHT CONTAINER

Toshiyuki Toyonaka, Yokohama; Akira Goto, Sakai-shi; Joji Ochi, Osaka; Katsumasa Hatamoto, Sakai-shi, and Tetsuji Arai, Funabashi-shi, all of, Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed July 14, 1969, Ser. No. 841,286
Claims priority, application Japan, July 20, 1968, Jan. 30, 1969, Jan. 17, 1969, 43/62233;44/8039;44/4134
Int. Cl. H02g *3/00*
U.S. Cl. 307—9 **13 Claims**

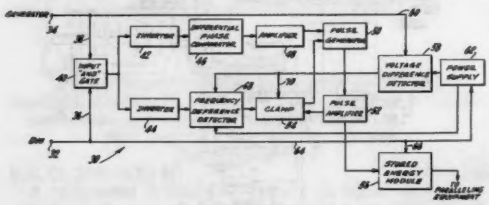


A refrigerator unit used for a freight container which may be operated at various places where the line voltages of available power are different, for example, 200 v. class and 400 v. class, said unit comprising electric loads rated for the dual voltages, switches for selecting appropriate power input terminals or relays for detecting the voltage of the connected power line, switches for changing connections of the electric loads so as to match the rated voltage of said loads with the power voltage, the above switches and relays being all interconnected to ensure safe operation.

3,601,619
AUTOMATIC SYNCHRONIZING MONITOR FOR PARALLEL CONNECTION OF TWO SEPARATE ALTERNATING-CURRENT SOURCES

Ralph H. Ringstad, Whippany, N.J., assignor to Automatic Switch Co.

Filed Dec. 3, 1969, Ser. No. 881,796
Int. Cl. H02j *3/42*
U.S. Cl. 307—87 **19 Claims**

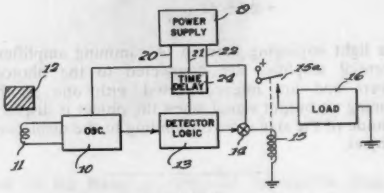


An automatic synchronizing monitor enabling the connection of two separate alternating-current sources in parallel and, more particularly, to permit parallel connection of the alternating-current sources when the phase angle, frequency, and voltage of the sources are substantially equal to one another and within predetermined limits so as to limit the resultant disturbance on a common bus to an absolute minimum when the paralleling takes place.

3,601,620
POWER SUPPLY

Gordon E. Gee, Homewood, Ill., assignor to Electro Proudcts Laboratories, Inc.

Filed July 18, 1969, Ser. No. 842,846
Int. Cl. H01h *35/00*
U.S. Cl. 307—116 **9 Claims**

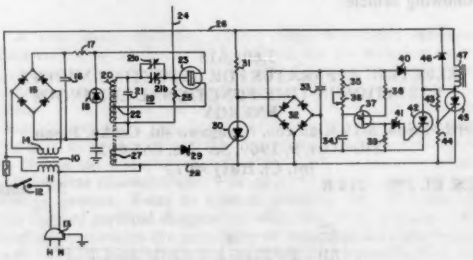


An AC to DC power supply for a sensing system in which an oscillator responds to a condition being sensed and a detector connected with the output of the oscillator provides a signal utilized in a control or indicator. The detector is connected with the power supply through a transistor switch which responds to the source of voltage and has a time delay to prevent energization of the detector unless the oscillator is operating.

3,601,621
PROXIMITY CONTROL APPARATUS

Edwin E. Ritchie, Rte 6, Box 6147, Bainbridge Island, Wash.

Filed Aug. 18, 1969, Ser. No. 850,967
Int. Cl. H01h *35/00*
U.S. Cl. 307—116 **6 Claims**



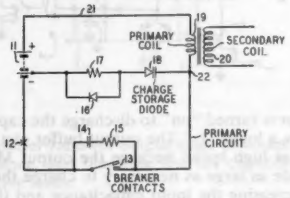
An electronic control responsive to the presence of an object in predetermined proximity to the probe thereof. The probe is connected to an oscillation generator which supplies electrical oscillations to a circuit which controls the initiation of the timing cycle of a timing device when an object is brought into proximity of the probe and electrical oscillations supplied by the generator are interrupted. The timing device supplies a signal to a control circuit after a predetermined timed interval to shut off the load circuit which was activated when the timing cycle was started.

3,601,622

CONTACT PROTECTION USING CHARGE STORAGE DIODES

Sigurd G. Waaben, Princeton, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Apr. 17, 1969, Ser. No. 817,053
Int. Cl. H01h 9/30
U.S. Cl. 307—136 7 Claims



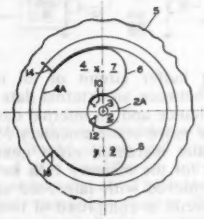
A diode characterized by a long minority carrier lifetime and supplied with a charging current is connected in parallel with a pair of electrical contacts. When the contacts are opened the diode provides, in effect, a short circuit across the contacts thereby preventing arcing for a predetermined period until the accumulated charge in the diode is depleted.

3,601,623

FLEX LEAD ASSEMBLY HAVING MINIMUM AND SUBSTANTIALLY CONSTANT FRICTION AND TORQUE

George A. Kirsch, Little Falls, N.J., assignor to The Bendix Corporation

Filed Sept. 23, 1969, Ser. No. 860,340
Int. Cl. H01r 39/00
U.S. Cl. 307—145 6 Claims



A flex-lead arrangement for providing a plurality of circuits electrically connecting stationary and angularly displaceable components. The arrangement provides substantially constant and minimum levels of friction and torque and maintains these minimum levels through wide angular displacements.

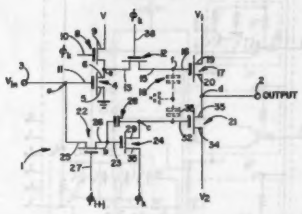
3,601,624

LARGE SCALE ARRAY DRIVER FOR BIPOLAR DEVICES

Donald E. Hayes, Orange, Calif., assignor to North American Rockwell Corporation

Filed Dec. 22, 1969, Ser. No. 887,152
Int. Cl. H03k 17/60
U.S. Cl. 307—151 7 Claims

A large scale array driver provides a current source for holding a bipolar device on until commanded to provide a transient current sink for the device. The current sink turns the device off and it remains off due to the biasing of the bipolar device being driven. The driver has one channel for



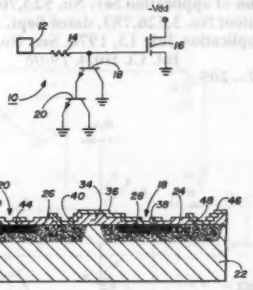
controlling its current source mode and another channel for controlling its transient current sink mode.

3,601,625

MOSIC WITH PROTECTION AGAINST VOLTAGE SURGES

Donald J. Redwine, and Earl M. Worstell, Jr., both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed June 25, 1969, Ser. No. 836,266
Int. Cl. H03k 3/35
U.S. Cl. 307—202 6 Claims



A circuit for protecting a metal-insulator semiconductor integrated circuit (MOSIC) against voltage surges is described. The circuit utilizes a diffused PN junction connected between the gate of an input MOS transistor and the source voltage in such a manner that the control voltage applied to the gate reverse biases the PN junction, which then functions as a Zener diode. The circuit may include a diffused resistance between the gate and the source voltage, or between the gate and an input terminal to protect either the diode, or the gate, or both against heavy current levels. Two or more diodes can be connected back to back to provide a higher breakdown voltage and permit higher control voltage signals to be used.

3,601,626

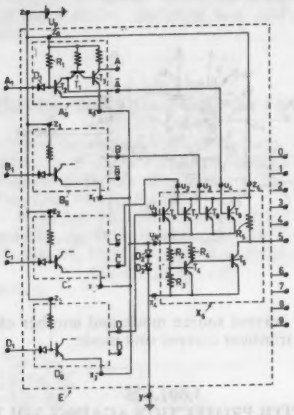
LOGIC ELEMENT

Hans Hoffmann, Harks-Heide; Ludwig Wittorf, Harks-Heide; Hans-Wilhelm Neuhaus, Hamburg, and Uwe Bertram, Hamburg, all of, Germany, assignors to U. S. Philips Corporation, New York, N.Y.

Filed Feb. 26, 1969, Ser. No. 802,576
Claims priority, application Germany, Feb. 29, 1968, P 15 37 986.9
Int. Cl. H03k 19/08
U.S. Cl. 307—203 4 Claims

A digital logic element in which a single voltage supply

provided current to an input circuit connected in series with a diode biased in the forward conduction region. Voltage for

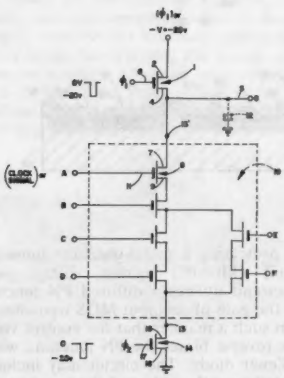


supplying part of a digital output circuit in the element is taken from the junction of the input circuit and the diodes.

3,601,627
MULTIPLE PHASE LOGIC GATES FOR SHIFT REGISTER STAGES

Robert K. Booher, Mission Viejo, Calif., assignor to North American Rockwell Corporation

Continuation of application Ser. No. 523,769, Jan. 28, 1966, now Patent No. 3,526,783, dated Sept. 1, 1970. This application July 13, 1970, Ser. No. 54,113
Int. Cl. H03k *19/08*
U.S. Cl. 307—205 **10 Claims**



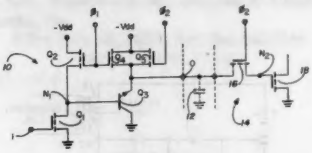
Logic gates having an isolation transistor connected to a common point between a load transistor and a two terminal logical network are combined at least partially with logic gates having the output connected to a common point between the load and isolation transistors for forming shift register stages.

3,601,628
PRECHARGE MOS-BIPOLAR OUTPUT BUFFER

Donald J. Redwine, and Earl M. Worstell, Jr., both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed June 25, 1969, Ser. No. 836,510
Int. Cl. H03k *19/08*
U.S. Cl. 307—205 **6 Claims**

A two-phase, precharge MOS-bipolar output buffer for an integrated semiconductor circuit which utilizes a bipolar transistor and an MOS transistor formed on the same semiconductor chip and connected in push-pull configuration at the output. The bipolar transistor is turned "off" and the MOS transistor turned "on" regardless of the level of the logic input during a first pulsed clock to precharge the capacitive load to a logic "1," then the bipolar transistor is kept "off" to maintain the logic "1" if the logic input is a

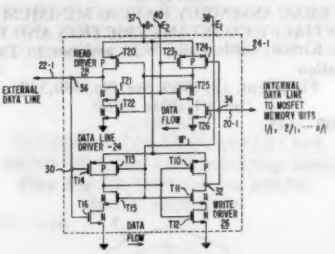


logic "0" or is turned "on" to discharge the capacitive load if the input is a logic "1." The output buffer can drive capacitive loads at high speed because the output MOS transistor can be made as large as necessary to charge the load rapidly without increasing the input capacitance and the gain of the bipolar device provides the necessary current to discharge the load rapidly.

3,601,629
BIDIRECTIONAL DATA LINE DRIVER CIRCUIT FOR A MOSFET MEMORY

James R. Cricchi, Baltimore, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 6, 1970, Ser. No. 9,380
Int. Cl. H03k *19/08*
U.S. Cl. 307—205 **11 Claims**



A noninverting buffer circuit of an integrated circuit memory coupled between an external data line having relatively large capacitance and an internal data line commonly coupled to one or more complementary MOSFET memory cells which provides increased noise immunity and lower input capacitance for the memory cells so that nondestructive readout is achieved with improved access times. The data line driver circuit is comprised of two identical circuit portions connected between the external and internal data lines in mutually opposite directions and operate so as to be mutually operative and inoperative or both simultaneously inoperative to translate binary logic signals to and from the memory cells from an external source. When either of the two circuit sections are operable the operative section effectively acts as two logic inverters connected in series between the respective external and the internal digit data line.

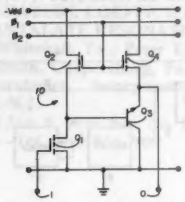
3,601,630
MOS CIRCUIT WITH BIPOLAR EMITTER-FOLLOWER OUTPUT

Donald J. Redwine, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed June 26, 1969, Ser. No. 836,811
Int. Cl. H03k *19/08*
U.S. Cl. 307—205 **6 Claims**

An inverter for a metal-insulator-semiconductor integrated circuit which utilizes an MOS inverter stage followed by a bipolar emitter-follower stage is disclosed. The inverter stage may have multiple inputs to form a gate. The emitter-follower stage employs a bipolar transistor with an MOS

transistor as the load impedance. The size of the output MOS transistor can be changed to provide optimum drive characteristics without redesigning the remainder of the integrated



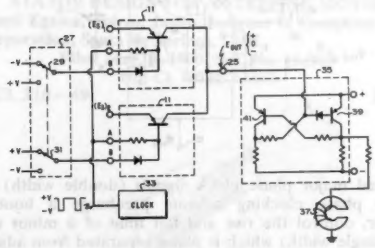
circuit. The emitter-follower output stage provides a very low output impedance, and therefore has the capability to drive higher capacitive loads.

3,601,631

BINARY INPUT CONTROLLED GATE CIRCUIT FOR ANALOG TYPE SIGNALS

Donald K. Miller, San Jose, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 12, 1968, Ser. No. 751,946
Int. Cl. H03k *17/00*
U.S. Cl. 307—209 **4 Claims**



A gate circuit includes a transistor which receives dual polarity analog-type input signals and conducts either as a forward or inverted gain amplifier or as two diodes to provide dual polarity output signals. The transistor is controlled at the base electrode thereof by resistor-diode logic circuitry responsive to binary signals having magnitudes greater than the duel polarity input signals. A plurality of the transistor gate circuits in combination permit time multiplexing of duel polarity signals to an analog type of load such as a magnetic head in an NRZ recording system.

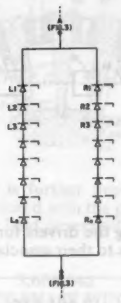
3,601,632

MEANS FOR INCREASING THE RELIABILITY OF ELECTRONIC CIRCUITS INCORPORATING ZENER DIODES

Larry Vane W. Frazier, Ventura, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Oct. 6, 1969, Ser. No. 864,081
Int. Cl. G06f *11/08*
U.S. Cl. 307—219 **1 Claim**

An arrangement for increasing the reliability of an electronic circuit employing individual Zener diodes, especially where such circuit is in a location difficult of access. Failure of one Zener diode in such an environment frequently results in long delays and great expense in locating the malfunction and making the repair. The present concept employs a plurality of Zener diodes in a network consisting of both series and parallel groupings, so that shorting of any one element



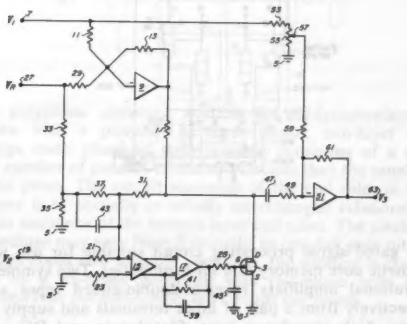
changes the electrical characteristics of the overall network by only a negligible amount.

3,601,633

PRECISION MULTIPLIER AND DC TO AC CONVERTER

Lawson C. Nichols, Midland Park, N.J., assignor to The Bendix Corporation

Filed June 17, 1969, Ser. No. 833,992
Int. Cl. G06g *7/16*
U.S. Cl. 307—229 **7 Claims**



A multiplier circuit having a fixed resistor and a variable resistance such as a field effect transistor, controlled by a variable DC input signal, forming an attenuator having an attenuation factor determined by the DC input signal. A fixed DC signal is applied to the attenuator and the attenuator provides a DC output signal which is fed-back and added to the variable DC input signal so that the attenuation factor is substantially independent of the characteristics of the variable resistance and is determined by the DC input signal. A variable AC input signal also is applied to the attenuator which provides an AC signal at its output corresponding to the product of the AC and DC input signals.

3,601,634

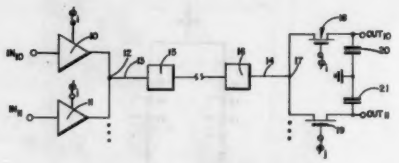
FIELD EFFECT TRANSISTOR MULTIPLEXING CIRCUIT FOR TIME SHARING A COMMON CONDUCTOR

Michel A. Ebertin, Yorba Linda, Calif.

Filed July 13, 1970, Ser. No. 54,114
Int. Cl. H03k *17/60*
U.S. Cl. 307—251 **5 Claims**

A plurality of output drivers gated by multiple phase clocking signals are connected together at a common con-

ductor. Sampling transistors for each of the drivers are connected to the common conductor and are gated by the same



clocking signals gating the drivers for synchronizing the connections of the drivers to their associated outputs.

3,601,635

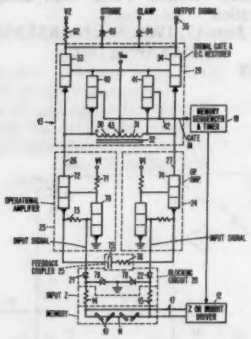
GATED SIGNAL PROCESSING CIRCUITS FOR LOW-LEVEL SIGNALS

David E. Norton, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 10, 1969, Ser. No. 840,753

Int. Cl. H03k *17/00*

U.S. Cl. 307—246 **8 Claims**



A gated signal processing circuit suitable for use with a magnetic core memory as a sense amplifier. Two symmetrical operational amplifiers receive double-ended input signals respectively from a pair of input terminals and supply them to two high impedance lines. Signal gate and DC restore means receive the amplified signals from the high impedance lines. The latter means includes a pair of like-poled identical windings serially connected across the high impedance lines. A pair of gating transistors operable in the so-called inverted mode are respectively connected across the windings for acting as a gate and enabling DC restoration to the high impedance lines. When current conductive, the inverted-mode, operable transistors clamp the high impedance lines to a predetermined reference potential to place the circuit in an inactive operational state during which time no signals are processed. No base current flows into the windings. When such transistors are switched to a high impedance mode (collector current cutoff), the circuit is placed into an active operational state for processing low-level input signals. An output circuit, connected across the high impedance lines, includes a pair of grounded-base connected, silicon junction transistors having their collectors connected to a single output terminal. The silicon transistors provide a signal threshold such that, when the circuit is in its inactive operational state, noise is not passed to the output terminal. The gate transistors are switched to the high impedance mode for a period of time bracketing the low-level signal processing. Such operation enables DC restoration before and after signal processing.

3,601,636

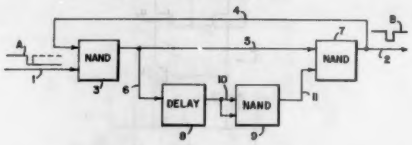
SINGLE-SHOT DEVICE

Lynn W. Marsh, Jr., Melrose, Mass., assignor to Mohawk Data Sciences Corporation, Herkimer, N.Y.

Filed June 23, 1969, Ser. No. 835,606

Int. Cl. H03k *3/284, 19/36*

U.S. Cl. 307—273 **6 Claims**



A single-shot device having two NAND gates which are interconnected to provide an output signal in response to an input signal. The output signal remains for a predetermined duration until the output signal of one NAND gate is applied through a delay to the other NAND gate. The delay comprises a transient network which performs an integrating function and contains a series connected resistor and a parallel connected capacitor.

3,601,637

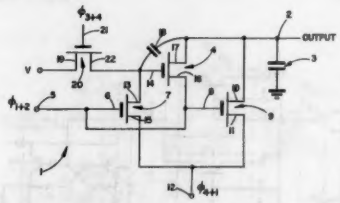
MINOR CLOCK GENERATOR USING MAJOR CLOCK SIGNALS

John R. Spence, Villa Park, Calif., assignor to North American Rockwell Corporation

Filed June 25, 1970, Ser. No. 49,884

Int. Cl. H03k *3/26, 19/08*

U.S. Cl. 307—304 **8 Claims**



Selected major phase clock signals (double width) of a multiple phase clocking scheme precharge a bootstrap capacitor, control the rise and fall time of a minor clock signal (single width) which is phase separated from adjacent clock signal phases.

3,601,638

FUEL ELEMENTS FOR USE IN THERMIONIC NUCLEAR REACTORS

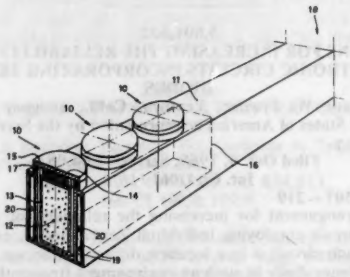
Claus A. Busse, Laveno, Italy, assignor to European Atomic Energy Community (Euratom), Brussels, Belgium

Filed Mar. 4, 1968, Ser. No. 710,252

Claims priority, application Luxembourg, Apr. 4, 1967, EUR/C/1899/67 1081 d

Int. Cl. H01j *45/00*

U.S. Cl. 310—4 **4 Claims**



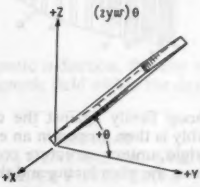
Disclosed are nuclear fuel heated thermionic converters.

Heat pipes are provided to ensure isothermal heat transfer between the converters and the reactor.

3,601,639
LOW-TEMPERATURE COEFFICIENT LITHIUM TANTALATE RESONATOR

John J. Hannon, Whitehall, Pa.; Peter Lloyd, Derry, N.H., and Robert T. Smith, Coopersburg, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Jan. 9, 1970, Ser. No. 1,699
Int. Cl. H01v *7/00*
U.S. Cl. 310—9.5 **7 Claims**

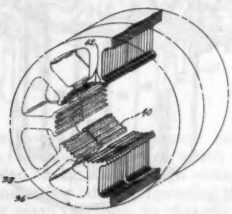


Length extensional mode and width-length flexure mode resonators fabricated from lithium tantalate piezoelectric single crystals cut to have orientations within the range of *zyw* (+25° to *zyw* (+50°) exhibit zero temperature coefficients of frequency, thus permitting their use as resonators in wide-band crystal filters and voltage controlled oscillators.

3,601,640
STATOR DESIGN FOR A STEPPING MOTOR

Katsumi Egawa, Tokyo, Japan, assignor to Computer Devices Corporation, Santa Fe Springs, Calif.

Filed Mar. 3, 1970, Ser. No. 16,063
Int. Cl. H02k *37/00*
U.S. Cl. 310—49 **3 Claims**



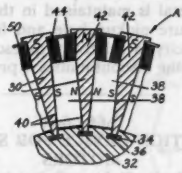
A stepping motor in which the stator is constructed from a plurality of laminations wherein each lamination is formed with a plurality of inwardly projecting pole portions. The inner edge of each pole has a number of equally spaced teeth which are offset relative to the centerline of the pole portion by one-fourth the pitch of the teeth. By assembling the stator with half the laminations reversed from the other half, the teeth in one-half are offset by one-half the pitch from the teeth in the other half of the stator stack.

3,601,641
EDDY CURRENT AND/OR INDUCTION BRAKE OR CLUTCH

Max Baermann, 506 Bensberg, Bezirk, Cologne, Germany

Filed Jan. 26, 1970, Ser. No. 005,889
Claims priority, application Germany, Jan. 24, 1969, P 19 03 528.0
Int. Cl. H02k *49/02*
U.S. Cl. 310—93 **10 Claims**

An eddy current and/or induction brake or clutch comprised of, a braking inductor and a ferromagnetic eddy current conductor arranged for relative rotation with respect to one another. The inductor includes a plurality of pole shoes of alternating magnetic polarity arranged in an annular ring and a plurality of permanent magnets disposed intermediate

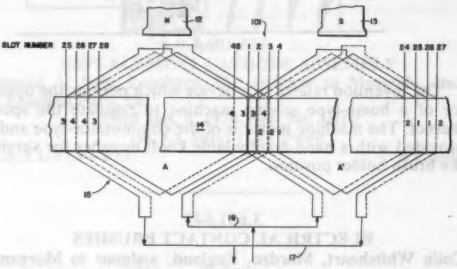


the pole shoes. There is further provided electromagnetic means operatively associated with the permanent magnets for regulating the magnetic field generated by the inductor.

3,601,642
MULTI-THREE PHASE WINDING WITH INTERCHANGED CIRCUIT SEQUENCE

David M. Willyoung, Scotia, N.Y., assignor to General Electric Company

Filed Jan. 22, 1970, Ser. No. 4,888
Int. Cl. H02k *3/00, 27/02*
U.S. Cl. 310—198 **9 Claims**

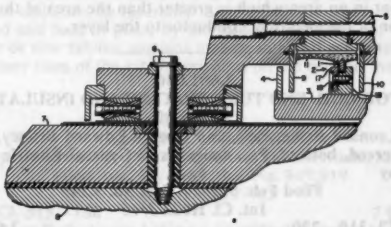


A polyphase armature winding for a dynamoelectric machine with a plurality of three phase, two-layer lap windings, each phase of each winding consisting of a different number of parallel-connected circuits than the number of rotor poles. The circuit sequence of the coil sides in the top layer is in partially or wholly interchanged relationship with the sequence of the bottom layer coil sides. The pitch of the windings may vary from five-sixths to one-full pole pitch. Although applicable to many variations, the winding is exemplified by a six-phase generator with two-phase belts per phase and four parallel-connected circuits per phase.

3,601,643
ANTIEROSION FEED SLOT FOR LIQUID METAL COLLECTOR

Gerd E. Krulls, Scotia, and William L. Durrwang, Schenectady, both of, N.Y., assignors to General Electric Company

Filed Mar. 5, 1970, Ser. No. 16,647
Int. Cl. H02k *29/00*
U.S. Cl. 310—219 **2 Claims**



In a liquid metal collector of the rotatable cup-type, the stationary member is provided with a segmented conductor blade such that a circumferential liquid feed groove and cir-

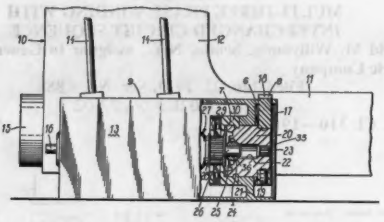
cumferential liquid pressure groove are formed between rings. At the bottom of each groove, respectively, a pressure pickup hole and feed hole are provided such that the proper level of liquid metal is maintained in the rotatable cup. By placing the pressure pickup hole and feed hole where the liquid metal velocity is relatively quiescent, erosion of the conductor ring at the discontinuities is prevented.

3,601,644

SPEED REGULATION DEVICE FOR SEWING MACHINE MOTORS

Silvano Perlino, Pavia, Italy, assignor to Necchi Societa per Axioni, Pavia, Italy

Filed Dec. 17, 1969, Ser. No. 885,829
Claims priority, application Italy, Dec. 19, 1968, 32422/68/A
Int. Cl. H02k *13/00*
U.S. Cl. 310—241 **2 Claims**



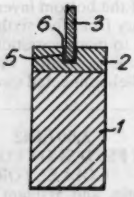
The invention relates to a device which permits the operator of a home-type sewing machine to regulate the speed thereof. The machine motor is of the commutator-type and is provided with a hand-manipulable knob member for varying the brush holder position.

3,601,645

ELECTRICAL CONTACT BRUSHES

Colin Whiteheart, Morden, England, assignor to Morganite Carbon Limited, London, England

Filed May 16, 1969, Ser. No. 825,305
Claims priority, application Great Britain, May 23, 1968, 24,637/68
Int. Cl. H01r *39/36*
U.S. Cl. 310—249 **10 Claims**



An electrical brush comprises a metal-and-carbon containing body and a metallic layer to which an electrical conductor is or may be secured and electrically connected. The metal-and-carbon containing body is sintered with the metallic layer in an area which is greater than the area at the connection of the electrical conductor to the layer.

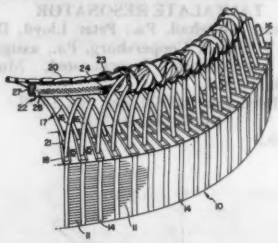
3,601,646

ROTOR COIL END TURN BRACING AND INSULATION SYSTEM

Roy Leonard Balke, Erie, and George Edward Brissey, Harborcreed, both of, Pa., assignors to General Electric Company

Filed Feb. 6, 1970, Ser. No. 9,149
Int. Cl. H02k *3/46*
U.S. Cl. 310—270 **3 Claims**

An end turn bracing arrangement for the rotor of dynamo electric machine in which a glass fiber rope consisting of glass fibers surrounded by woven glass sleeve is passed through the end turns of the rotor to form a circular hoop within the end turns. The glass hoop may, if desired, be held against the end turns, by means of a fiberglas lacing braid which is wound around the end turns and the hoop to anchor



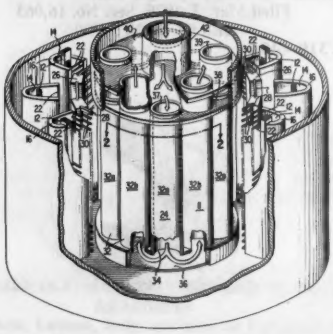
the glass fiber hoop firmly against the copper conductors. The entire assembly is then dipped in an epoxy resin which is cured to form a rigid, unitary structure consisting of the glass hoop, the end turns, the glass lacing and the cured resin.

3,601,647

HIGH POWER ELECTRON DISCHARGE DEVICE HAVING ANODE WITH IMPROVED HEAT DISSIPATION CAPABILITY

Fred George Hammersand, East Petersburg, Pa., assignor to RCA Corporation

Filed Feb. 27, 1969, Ser. No. 802,783
Int. Cl. H01j *1/42, 19/36*
U.S. Cl. 313—30 **14 Claims**



An electron discharge device having an anode comprising a plurality of hollow pipes. The pipes have relatively thin, continuous walls of uniform dimension and generally may be of any cross-sectional geometry. The pipes are adjacently disposed in a circular or linear array such that the electron-intercepting surfaces thereof are oblique to the direction of the electron beams. The angles of incidence of the electron beams on the pipe surfaces preferably have a minimum average value. A cooling medium is circulated through the interiors of the pipes.

3,601,648

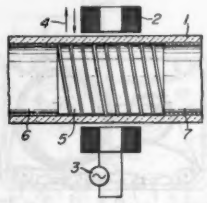
CONDUCTIVE FILM FOR ELECTROMAGNETIC DEFLECTION DEVICE

Yoshihiro Uno, Tokyo, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan

Filed June 26, 1968, Ser. No. 740,340
Claims priority, application Japan, July 11, 1967, 42/45176
Int. Cl. H01j *19/40, 29/02*
U.S. Cl. 313—64 **6 Claims**

A conductive surface for an electromagnetic deflection

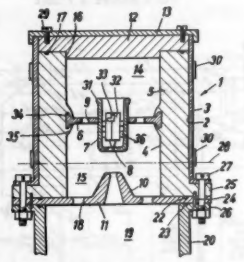
device formed with helical, linear or zigzag gaps to thereby alter a current which flows through the conductive surface due to electromagnetic induction, thereby making possible a high frequency magnetic field within the device.



3,601,649
ELECTRON BEAM GENERATING SYSTEM FOR HIGH BEAM POTENTIALS

Karl-Heinz Steigerwald, Mozartstrasse 27, Lochham near Munich, Germany

Filed Dec. 12, 1966, Ser. No. 601,082
Claims priority, application Germany, Dec. 13, 1965, ST 24757
Int. Cl. H01j *29/00, 5/14*
U.S. Cl. 313—82 **5 Claims**



This invention concerns an electron beam generating system for high beam voltages in which the insulation between a grounded casing and the high-voltage electrodes is achieved by an insulating body surrounding the high-voltage electrodes with a small distance, so that the dimensions of the system are considerably smaller than with arrangements in which the insulation is primarily achieved by providing sufficient vacuum space about the high-voltage electrodes.

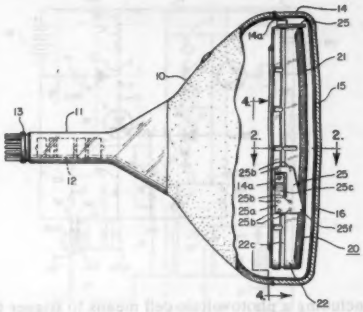
The invention is further concerned with an automatically actuable replacement device for cathode holders, said replacement device being adapted to be controlled by monitoring means for at least one beam parameter so that the cathode holder under operation will be automatically replaced by a fresh cathode holder and cathode when the magnitude of the sensed beam parameter falls outside a predetermined range.

3,601,650
INTEGRATED SHADOW MASK STRUCTURE

Nicholas P. Pappadis, Chicago, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Aug. 11, 1969, Ser. No. 848,800
Int. Cl. H01j *29/46*
U.S. Cl. 313—85 **2 Claims**

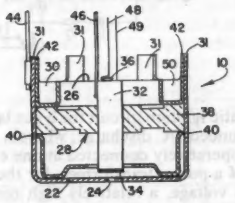
The shadow mask of a color cathode-ray tube is constructed of a single piece of metal formed to have a color-selection portion with a field of apertures and also to have a circumscribing mounting frame contiguous to the color-selection portion. A stiffening rib is pressed into the mounting frame to add mechanical strength and the mounting springs further contribute to strengthening the structure. Each spring extends from a baseplate which bridges the stiffening rib of the frame and is welded to the frame on opposite sides of the stiffening rib.



3,601,651
REPLACEMENT CATHODE ASSEMBLY

Donald A. Neis, Lombard, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Jan. 9, 1970, Ser. No. 1,760
Int. Cl. H01j *1/20, 29/48*
U.S. Cl. 313—237 **6 Claims**



A replaceable electron emission cathode for use in electron guns within television picture tubes or the like. The first grid of an electron gun forms a support member for an electron emission cathode assembly which is held to the support member by retainer means. The support member has a plurality of spaced-apart severable tablike portions extending therefrom to mate with and be fastened to corresponding tablike portions formed on the retainer means. To replace the cathode of the electron gun, the fastened together tablike portions of the support member and retainer means are severed from the structure to allow removal of the retainer means and cathode assembly. A new cathode assembly is inserted and held in place by the same or new retainer having other or new tablike portions mating with and are fastened to auxiliary ones of the tablike portions on the support member.

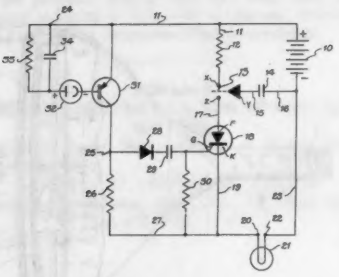
3,601,652
SLAVE FLASH LIGHT

Harry L. Burnett, Jr., 6904 Ingraham St., Riverdale, Md.

Filed Aug. 13, 1969, Ser. No. 849,819
Int. Cl. H05b *37/02*
U.S. Cl. 315—156 **7 Claims**

A slave flash device having a simplified circuitry triggered by light, which may, of course, include ultraviolet or infrared light waves from a distant source. The device including a battery and a resistance connected in series with parallel con-

ducting means having a condenser in one branch and a silicon controlled rectifier and a flashbulb in the other branch,

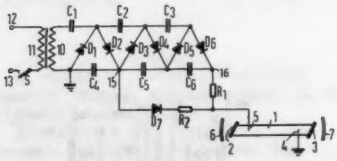


and including a photovoltaic cell means to trigger the silicon controlled rectifier.

3,601,653
GAS LASER WITH AUTOMATIC IGNITION

Hans Golser, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Dec. 4, 1969, Ser. No. 882,088
Claims priority, application Germany, Feb. 4, 1969, P 19 05 409.2
Int. Cl. H05b *41/16*; H01j *11/04*
U.S. Cl. 315—341 **4 Claims**



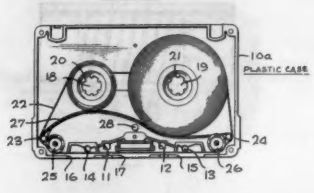
An automatic ignition circuit for a gas laser preferably one having a grounded DC discharge, wherein a voltage multiplier circuit is operatively connected at one end to the secondary winding of a power transformer, for the generation of the high ignition voltage, a relatively high resistance connected to the high voltage end of such circuit operative to connect such end to an electrode of the gas laser defining the discharge section, a relatively low resistance and a diode in series therewith operatively connected to an intermediate point of said multiplier, operative to connect such electrode to said intermediate point, such point being located to provide, during laser operation, a voltage corresponding approximately to the normal operating voltage whereby the high voltage end of said multiplier is operatively shunted to block said high voltage.

3,601,654
ELECTROSTATIC-FREE TAPE CASSETTE

Brian H. Long, Orange; Oliver T. Tetirick, Orange, and Richard W. Erickson, Santa Ana, all of, Calif., assignors to Certron Corporation, Anaheim, Calif.

Filed June 22, 1970, Ser. No. 48,391
Int. Cl. H05f *3/00*
U.S. Cl. 317—2 R **10 Claims**

A standard tape cartridge of the coplanar twin hub-type, commonly referred to as a cassette, is rendered free of static electricity on the tape being transported from one hub to the other by a conductor, such as a conductive band of resilient material or conductive friction pins, in contact with the front (coated side) of the tape and electrically connected to conductive guide elements in contact with the back of the tape. The conductive band is provided as a V, U or O-shaped spring in contact with a conductive pin spaced some distance from the center of each coil, or in the form of a leaf spring wrapped around friction pins at front corners of the cassette

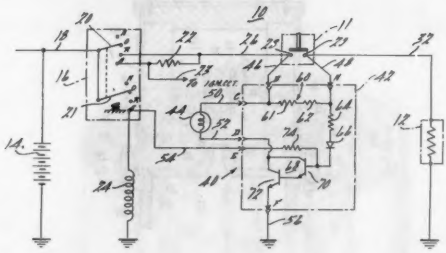


and arched to continually make contact with the back of the tape on the coils.

3,601,655
CIRCUIT CONTINUITY MONITORING, WARNING AND PROVING DEVICE

Poul H. Andersen, Royal Oak, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed May 25, 1970, Ser. No. 40,026
Int. Cl. G08b *21/00*
U.S. Cl. 317—9 B **16 Claims**



A circuit continuity and signal warning device for monitoring the continuity of an electrical circuit controlling the activation of a motor vehicle inflatable occupant restraining system. The monitoring warning device is connected by parallel circuit connections to the existing electrical circuit wiring of the vehicle and the electrical control circuit for the air bag system and provides a signal warning in the event of a circuit discontinuity in the electrical energization circuit, including the electrical detonation device, of the air bag system to warn the operator that the circuit is inoperative and the system is defective. The continuity monitoring device further features a signal proving or checking circuit that is operated each time the motor vehicle is started to prove the operability of the warning device.

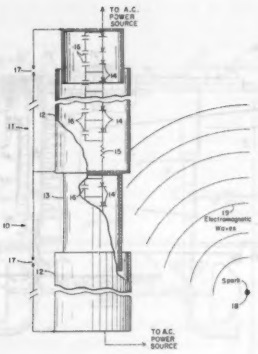
3,601,656
SILICON DIODE PROTECTION MEANS

Bob H. Smith, Berkeley, and Louis L. Reginato, Orinda, both of, Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed June 30, 1970, Ser. No. 51,239
Int. Cl. H02h *7/10*; H05k *9/00*
U.S. Cl. 317—13 R **7 Claims**

A means for protecting silicon diodes in high voltage power supplies from overload damage. Current limiting re-

sistors and a parallel spark gap provide protection against excessive forward current while shielding and the spark gap protect against excessive back voltages generated either directly or by electromagnetic waves.

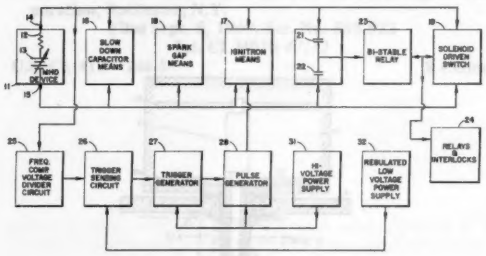


3,601,657

OVERVOLTAGE PROTECTIVE DEVICE

Henry R. Guarino, Revere, Mass., assignor to Avco Corporation, Cincinnati, Ohio

Filed Oct. 31, 1968, Ser. No. 772,140
Int. Cl. H02h *7/06*
U.S. Cl. 317—16 **11 Claims**



A high voltage, high current, short circuiting device which can sense a condition overvoltage at the output of a magnetohydrodynamic generator or the like and initiate a short circuit in microseconds. The device incorporates a high voltage, high current ignitron actuated by a voltage sensing circuit; a spring-loaded switch to assist the ignitron in carrying the short circuit current; a spark gap as back up for the ignitron; and a bistable relay for use in combination with the spring-loaded switch and to actuate auxiliary apparatus such as fuel cutoff valves and the like.

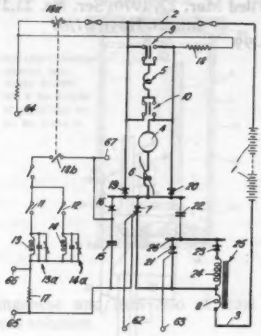
3,601,658

CONTROL SYSTEMS INCLUDING A SAFETY CIRCUIT FOR DIRECT CURRENT ELECTRIC MOTORS

Frank Manners, Basingstoke, England, assignor to Lansing Bagnall Limited, Basingstoke, Hampshire, England

Filed June 30, 1969, Ser. No. 837,567
Claims priority, application Great Britain, July 1, 1968, 31386/68
Int. Cl. H02h *7/09*; **H02p** *7/28*
U.S. Cl. 317—16 **11 Claims**

The invention concerns a pulse-controlled DC motor having a main thyristor coupled in a commutating circuit with an auxiliary thyristor and triggered from a speed control using feedback from the armature. A transistor switch is coupled across a trigger network for the auxiliary thyristor and is rendered conductive when the main thyristor is fired. This inhibits the commutating operation and enables the periods of energization of the motor to be modulated.



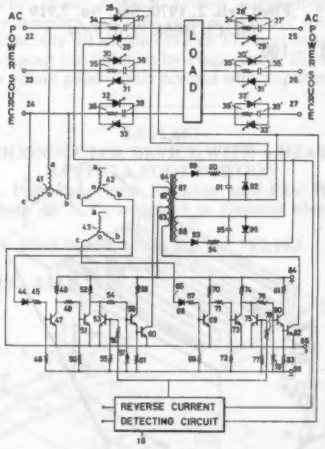
A safety circuit including a contactor having an operating coil coupled effectively in parallel with the main thyristor cuts off the motor if the energization period is too long.

3,601,659

REVERSE CURRENT DETECTOR UTILIZING THYRISTORS AND GATE SIGNAL INHIBITING CIRCUITRY

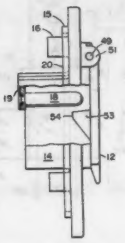
Sinya Tanaka, Tokyo, Japan, assignor to Sanken Electric Company, Limited, Saitama-ken, Japan

Filed Nov. 3, 1969, Ser. No. 873,215
Claims priority, application Japan, May 1, 1969, 44/34239;44/34238
Int. Cl. H02h *3/28*, *3/38*
U.S. Cl. 317—43 **8 Claims**



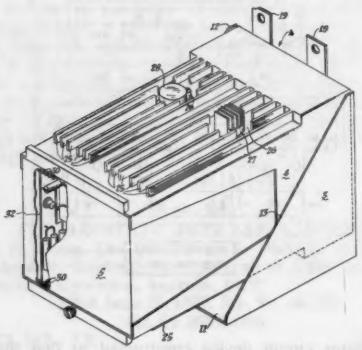
A thyristor circuit device constructed so that thyristor switches are used as protectors in the network system and a forward current can flow without being disturbed in any way but a reverse current is suppressed when it results and is completely cut off as occasion demands by applying to the gates of said thyristor switches a firing signal having a pulse duration determined within the limited time between the point of time corresponding to 90° phase angle of lead and the point of time corresponding to 90° phase angle of lag, taking a phase voltage of line as the reference point.

3,601,660
TRAILER CONNECTOR
Martin B. Brandt, Needham; Kent J. Batcheller, Westwood, and Francis Donald Kirchoff, Waban, all of, Mass., assignors to Joseph Pollak Corporation, Boston, Mass.
Filed Mar. 27, 1970, Ser. No. 23,219
Int. Cl. H01h *61/01*
U.S. Cl. 317—99 **6 Claims**

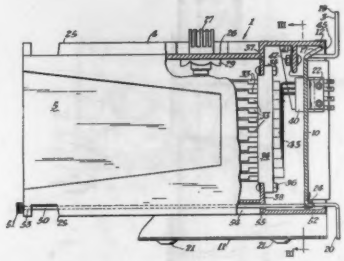


A multiconductor electrical connector socket comprising a conducting flange, having a permanently affixed ground conductor and plug receiving chamber, and a detachable molded insulating base containing circuit breakers. The detachable base has permanently affixed circuit breakers, conducting pins and buss strips in order to minimize the number of manual connection terminals. The connector is constructed so that when the flange and base are joined, an enclosure is formed, protecting the circuit breakers from damaging external forces.

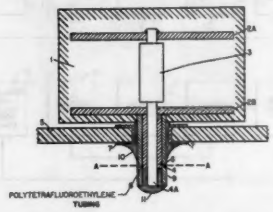
3,601,661
FINNED MODULAR ELECTRICAL EQUIPMENT PACKAGE WITH MOUNTING BRACKET
Edward J. Kleinhample, Jr., Allison Park, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.
Filed Feb. 2, 1970, Ser. No. 7,919
Int. Cl. H05k *7/20, 5/04*
U.S. Cl. 317—100 **14 Claims**



This disclosure relates to a modular electrical equipment package having a metallic mounting bracket, a metallic plug-in circuit board case and a metallic U-shaped cover. The metallic case includes a plurality of extending heat radiating fins and is telescopically engageable with the mounting bracket. The metallic case is initially suspended by and thereafter is securely held to the mounting bracket by an elongated retaining screw which is threadedly engaged to the mounting bracket.



3,601,662
TERMINATIONS FOR CORDWOOD MODULES
Sydney A. DeBarros, Dollard des Ormeaux, Quebec, Canada, assignor to Canadian Marconi Company, Montreal, Quebec, Canada
Continuation-in-part of application Ser. No. 732,367, May 27, 1968, now abandoned. This application Aug. 11, 1969, Ser. No. 849,131
Int. Cl. H05k *1/18, 3/30*
U.S. Cl. 317—101 CC **4 Claims**

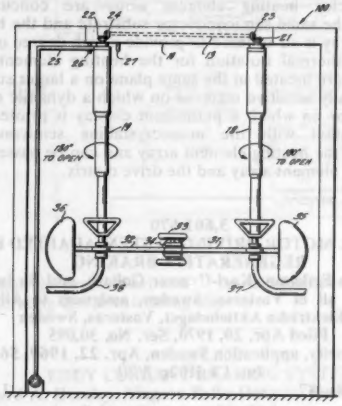


Termination means for each lead of a cordwood module which permits easy removal of the module from a circuit board on which it is mounted. The termination means includes a conductive cylinder which is placed over the lead and which is fixed to the circuit board, by soldering, on the side of the circuit board remote from the module. The lead is then soldered to the termination means at its end remote from the module, thereby providing a mechanical and electrical connection between the lead and the circuit board. The termination means is so constructed that, when a cut is made between the two solder joints, the lead is released from the board.

3,601,663
INSULATOR MOUNTING IN A HIGH POWER ELECTRICAL DISTRIBUTION SYSTEM
Roy H. Albright, Greensburg, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.
Filed Oct. 6, 1969, Ser. No. 864,016
Int. Cl. H02b *1/04;* **H01h** *33/24*
U.S. Cl. 317—103 **7 Claims**

A high power electrical distribution system wherein insulator stacks are mounted in an inverted, underhung position rather than in an upright position to support switches and/or

buses. An inverted or underhung mounting provides greater dielectric characteristics than a mounting of insulator stacks

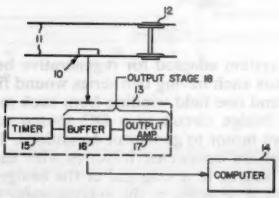


in a conventional upright manner, and permits a reduction in the required insulator height for a given voltage application.

3,601,664
WHEEL DETECTOR AMPLIFIER

John H. Aver, Jr., Fairport, and Jerry P. Huffman, Rochester, both of, N.Y., assignors to General Signal Corporation, Rochester, N.Y.

Filed Sept. 5, 1969, Ser. No. 855,523
Int. Cl. H01h *47/32*
U.S. Cl. 317—148.5 **8 Claims**



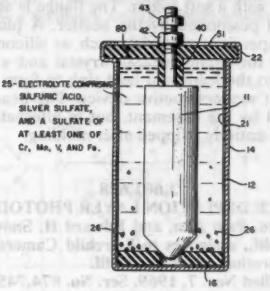
An improved amplifier responsive to wheel detector signals having a timing circuit producing signals relative to the duration of the wheel detector signals. An output stage responsive to the timing circuit signals produces output signals indicative of wheel presence and includes; a buffer for isolating the timing circuit and transmitting the signals, and an output amplifier responsive to the buffer signals having greater than a threshold value for producing the output signals.

3,601,665
CAPACITORS HAVING A SELF-DEPOLARIZING ELECTROLYTE

Thomas C. O'Nan; Charles W. Walters, and James M. Booe, all of Indianapolis, Ind.

Filed Sept. 29, 1969, Ser. No. 862,049
Int. Cl. H01g *9/02*
U.S. Cl. 317—230 **7 Claims**

A capacitor is provided comprising an anode made of tantalum or niobium, a silver cathode spaced from the anode and an electrolyte in contact with the anode and cathode, the electrolyte comprising an aqueous acid solution of sulfuric acid; silver sulfate at least partially dissolved in the acid solution and at least one metal sulfate selected from chromium,

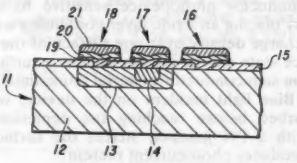


vanadium, manganese and iron also at least partially dissolved in the acid solution.

3,601,666
TITANIUM TUNGSTEN-GOLD CONTACTS FOR SEMICONDUCTOR DEVICES

Hayden M. Leedy, Plano, and Neal J. Tolar, Richardson, both of, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 21, 1969, Ser. No. 851,781
Int. Cl. H01l *19/00*
U.S. Cl. 317—234 R **6 Claims**

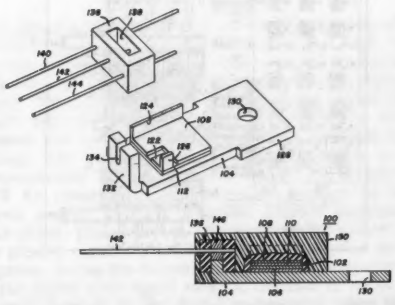


A trimetal ohmic contact system comprising titanium covered by tungsten and then gold is provided for semiconductors, especially for silicon devices. For best results it is essential to deposit the titanium by evaporation, since it is very difficult to obtain good ohmic contact with a sputtered film.

3,601,667
A SEMICONDUCTOR DEVICE WITH A HEAT SINK HAVING A FOOT PORTION

Richard J. Desmond, North Syracuse, and Paul W. Koenig, Clyde, both of, N.Y., assignors to General Electric Company

Filed Dec. 9, 1968, Ser. No. 782,183
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 317—234 R **10 Claims**



A foot portion is bent up from a planar, electrically conductive heat sink, and a header rigidly mounting circular

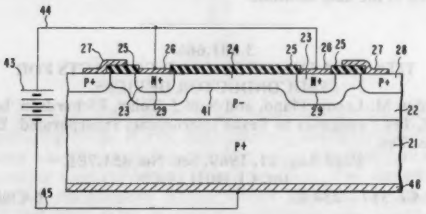
cross section electrical leads positions one of the leads in engagement with the foot portion. A semiconductor crystal is attached to the heat sink with a soft solder and a contact having an upstanding flange is similarly attached to the semiconductor crystal with a soft solder. The flange is attached to an electrical lead positioned by the header. A pliant, substantially fluid impervious material, such as silicone rubber, is cured around the semiconductor crystal and a casement is then molded to the leads and heat sink to form a shock and strain resistant semiconductive device. The header is in one form enclosed by the casement, but in alternate forms may be partially or entirely stripped after molding.

3,601,668

SURFACE DEPLETION LAYER PHOTODEVICE

Gary G. Slaten, Palo Alto, and Edward H. Snow, Los Altos, both of, Calif., assignors to Fairchild Camera and Instrument Corporation, Mt. View, Calif.

Filed Nov. 7, 1969, Ser. No. 874,745
Int. Cl. H011 *15/00*
U.S. Cl. 317—234 R **5 Claims**



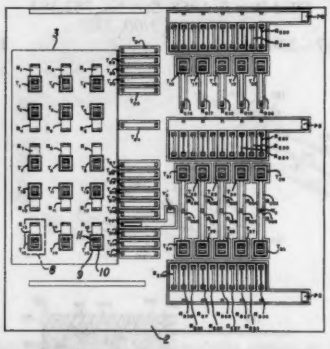
A semiconductor photodevice sensitive to blue light is produced by placing an oxide layer containing a selected surface state charge density over one surface of the device. The fixed surface state charge density creates a surface depletion region in the semiconductor material immediately underlying the oxide. Blue light incident on the device, which is normally absorbed before reaching the depletion region associated with a PN junction strikes the surface depletion layer and produces photocurrent therein.

3,601,669

INTEGRATED HEATER ELEMENT ARRAY AND DRIVE MATRIX THEREFOR

Jerry D. Merryman, and Edward M. Ruggiero, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 671,821, Pat. No. 3,501,615
Filed May 7, 1969, Ser. No. 847,750
Int. Cl. H011 *19/00*
U.S. Cl. 317—235 R **7 Claims**



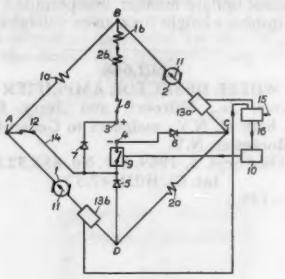
Thermal display including an air isolated integrated semiconductor circuit forming a semiconductor heater element array joined by a metallic connecting pattern which extends out over the heating elements to interconnect selected ones of them and a PN junction isolated integrated semiconductor drive matrix for the heating element array positioned in the same plane as the heating element array. The PN junction isolated integrated semiconductor drive matrix and the semiconductor heating element array are concurrently formed in the same semiconductor substrate and the heating element array is air isolated to provide a high degree of electrical and thermal isolation for the heating element array while both are located in the same plane on a larger support. The thermally sensitive material on which a dynamic display is formed or on which a permanent display is printed is in direct contact with the monocrystalline semiconductor material of the heating element array and can be passed over the heating element array and the drive matrix.

3,601,670

PLURAL MOTOR DRIVING SYSTEM ADAPTED FOR REGENERATIVE BRAKING

Lars Goran Eriksson; Karl-Gunnar Goliath, and Bo Ingemar Larsson, all of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Apr. 20, 1970, Ser. No. 30,095
Claims priority, application Sweden, Apr. 22, 1969, 5650/69
Int. Cl. H02p *7/70*
U.S. Cl. 318—87 **1 Claim**



A driving system adapted for regenerative braking having two DC motors each having two series wound field windings. The motors and one field winding from each motor are connected in a bridge circuit to a DC source to provide for changing from motor to generator conditions. The other two field windings are connected in series with each other and with the DC source in a diagonal of the bridge. The motors are controlled in response to the average value of motor current.

3,601,671

PLURAL MOTOR TRAIN CONTROL WITH SEQUENTIAL OR SELECTIVE STARTING FOR SPEED CONTROL

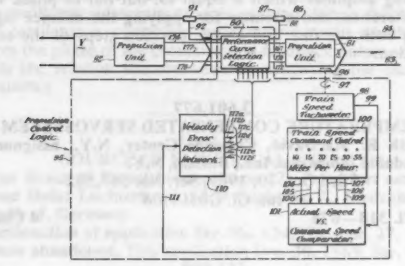
Donald R. Little, Greensburg, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Apr. 17, 1969, Ser. No. 816,915
Int. Cl. H02p *1/58*
U.S. Cl. 318—102 **15 Claims**

This invention relates to a single or multivehicle propulsion control system having at least two propulsion units.

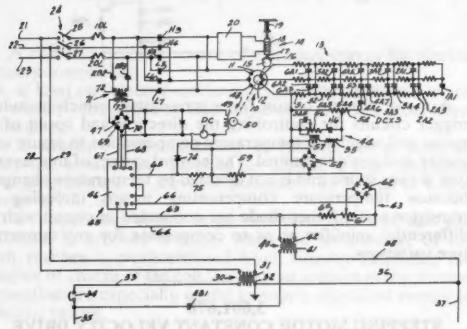
The system is comprised of at least one propulsion unit having a plurality of selectable operating modes and at least one other propulsion unit having a plurality of selectable operating modes. A propulsion control logic unit is operatively coupled respectively to the two just-recited propulsion units. These propulsion units are simultaneously controlled by the propulsion control logic unit to select a predetermined number of combinations of the modes of operation from the propulsion units, the predetermined number of combination modes available exceeding the number of modes available for

any one of the propulsion units. The selected combination of modes closely approximates the propelling effort required to



maintain the preselected vehicle or vehicles' speeds free from accelerating and decelerating effects.

3,601,672
EDDY CURRENT BRAKING SYSTEM
Edward A. Horsley, Niagara Falls, Ontario, Canada, assignor to Dominion Bridge Company Limited
Filed Aug. 6, 1969, Ser. No. 847,894
Int. Cl. B66d *5/02*
U.S. Cl. 318—204 **9 Claims**

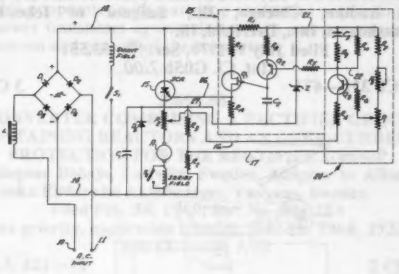


An eddy current braking system for wound rotor induction motors, particularly those employed in hoisting and lowering loads, employs apparatus for sensing reflected load torque and speed and utilizing a signal derived therefrom for controlling braking of the motor. The control signal is only a small fraction of and represents a large current in the motor circuit. System stability to negate hunting of the eddy current brake is provided by a feedback circuit connected between the exciting winding of the eddy current brake and the control input to a solid state firing circuit.

3,601,673
MOTOR CONTROL CIRCUIT
Raymond J. Mason, Lynwood, Calif., assignor to Minarik Electric Company, Los Angeles, Calif.
Filed Dec. 4, 1969, Ser. No. 881,954
Int. Cl. H02p *5/16*
U.S. Cl. 318—308 **16 Claims**

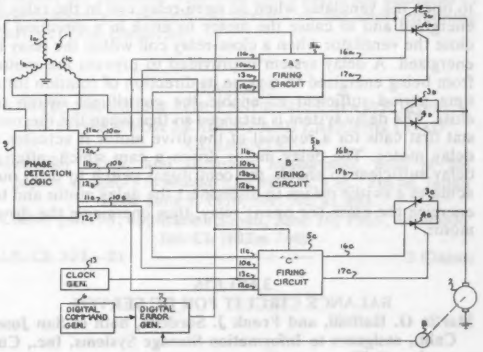
Alternating current rectified by a bridge rectifier is supplied through an SCR device to a motor armature; the bridge rectifier, SCR device, and armature being connected in a series loop circuit. A firing control circuit associated with the SCR device controls the angle at which the device fires during each half cycle of alternating current received from the bridge rectifier.

A storage capacitor and a freewheeling diode are coupled in parallel with the armature to assist in filtering. A resistor connected in series with the armature produces a feedback voltage signal which is proportional to armature current, and a resistive circuit branch arranged in parallel with the armature provides a feedback voltage signal which is proportional



to armature voltage. A signal responsive circuit combines the two voltage feedback signals into a composite control signal for controlling the firing control circuit previously referred to. The firing control circuit is connected between anode and cathode of the SCR device for receiving its operating energy when the SCR device is nonconductive.

3,601,674
CONTROL SYSTEM FOR FIRING SCR'S IN POWER CONVERSION APPARATUS
John A. Joslyn, Dalton, and Albert F. Koch, Lanesboro, both of, Mass., assignors to General Electric Company
Filed Feb. 5, 1970, Ser. No. 8,928
Int. Cl. H02p *5/06*
U.S. Cl. 318—318 **16 Claims**



A digital control system for controlling the flow of power via SCR's from a multiphase AC source to a load. A digital command signal is compared with a digital feedback signal indicative of motor speed so as to generate a digital error signal. The system includes a digital firing circuit for each phase wherein each firing circuit comprises a reversible counter and a digital comparator. Phase detection logic examines the three phases of the AC source so as to synchronously initiate a control interval for an appropriate SCR by presetting a predetermined positive or negative digital number into the reversible counter associated with each phase. The reversible counter thereafter counts down if the present number is positive, or up if the preset number is negative, during the control interval. Continuous comparison of the digital error signal with the contents of the reversible counter is made by the digital comparator: when the error signal exceeds the contents of the reversible counter, a firing

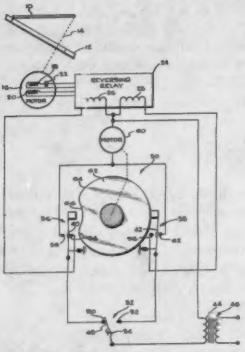
pulse is generated which is supplied to a positively poled SCR if the preset number is positive: when the contents of the reversible counter exceed the error signal, a firing pulse is generated which is supplied to a negatively poled SCR if the preset number is negative.

3,601,675

VENTILATOR CONTROLLER FOR A GREENHOUSE

Carl Radtke, Chicago, Ill., assignor to Ickes-Braun Glasshouses, Inc., Deerfield, Ill.

Filed July 9, 1970, Ser. No. 53,551
Int. Cl. G05b *7/00*
U.S. Cl. 318—471 **3 Claims**



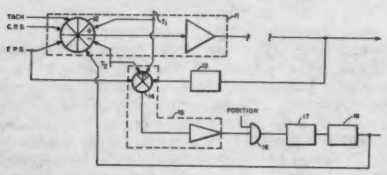
A controller for opening and closing a ventilator for a greenhouse in response to temperature sensed by a thermostat within the greenhouse. The ventilator is opened and closed by a single-phase capacitor start motor having a centrifugal switch connected in series with its starting winding. The motor is controlled by a reversing relay which is coupled to the motor so as to cause the motor to drive in a direction to open the ventilator when an open-relay coil in the relay is energized and to cause the motor to drive in a direction to close the ventilator when a close-relay coil within the relay is energized. A delay system is provided to prevent the motor from being energized to reverse its direction of rotation for a time period sufficient to enable the centrifugal switch to close. The delay system is arranged so that when the thermostat first calls for a reversal of the drive motor it actuates a delay motor. The delay motor drives a cam which, after a delay sufficient to enable the centrifugal switch to drop out actuates a switch means to disconnect the delay motor and to energize the close (or open) relay, thus energizing the drive motor.

3,601,676

BALANCE CIRCUIT FOR DC SERVOS

Martin O. Halfhill, and Frank J. Sordello, both of San Jose, Calif., assignors to Information Storage Systems, Inc., Cupertino, Calif.

Filed Aug. 20, 1969, Ser. No. 851,692
Int. Cl. G05d *23/275*
U.S. Cl. 318—592 **7 Claims**



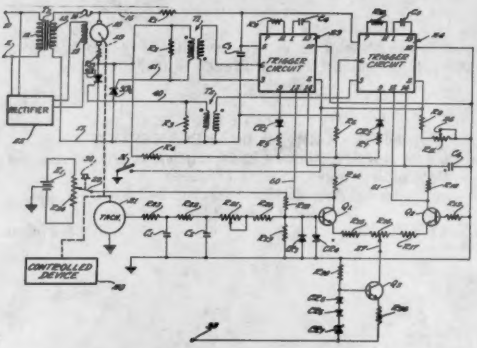
A balance circuit for neutralizing offsets and drift of all inputs to the summing amplifier of a DC servo including: a balance amplifier for comparing the drive signal applied to a servo controlled motor with selected inputs to the summing amplifier to determine any difference therebetween and developing a balance signal for feedback to the input of the summing amplifier which is equal to, but out of phase with the difference, and circuitry for applying the balance signal during both the fine and coarse position steps of the servo operation.

3,601,677

TEMPERATURE COMPENSATED SERVOSYSTEM

Kenneth R. MacDavid, Clarence Center, N.Y., assignor to Houdaille Industries, Inc., Buffalo, N.Y.

Filed Oct. 20, 1969, Ser. No. 867,582
Int. Cl. G05f *1/08*
U.S. Cl. 318—678 **4 Claims**



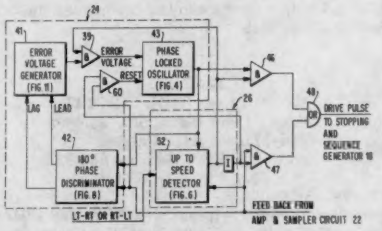
A motor control circuit for a servosystem which includes trigger circuits for controlling the direction and speed of a motor and which has temperature compensation to assure accurate and positive control. The control system of this invention is very stable and is not affected by temperature changes because temperature compensating means including a transistor and a Zener diode are connected in circuit with a differential amplifier so as to compensate for any temperature variations.

3,601,678

STEPPING MOTOR CONSTANT VELOCITY DRIVE INCLUDING CLOSED AND OPEN LOOP CONTROL

Dennis G. Abraham, Vestal; George J. Dohanich, Binghamton, and Joseph P. Pawletko, Endwell, all of, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 27, 1970, Ser. No. 41,032
Int. Cl. G05b *19/40*
U.S. Cl. 318—685 **9 Claims**


ERROR VOLTAGE GENERATOR (FIG. 9)
ERROR VOLTAGE
RESET
PHASE LOCKED OSCILLATOR (FIG. 4)
LAG
LEAD
DRIVE PULSE TO STOPPING AND SEQUENCE GENERATOR 18
180° PHASE DISCRIMINATOR (FIG. 8)
UP TO SPEED DETECTOR (FIG. 6)
LT-RT OR RT-LT
FEED BACK FROM AMP & SAMPLER CIRCUIT 22

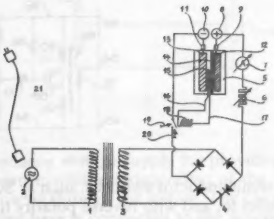
A stepping motor drive which includes both a closed loop feedback control system and an open loop oscillator control system. The stepping motor is started by a start pulse, and feedback pulses from an emitter driven by the motor are

gated to accelerate the motor. At the same time, the feedback pulses are gated to reset and synchronize a free-running oscillator. Feedback and oscillator pulses are compared, and when synchronism is achieved, i.e., the motor is up to speed, the oscillator pulse gate drive is enabled. When this occurs, the oscillator is controlled by a discriminator which compares the phase of the oscillator and feedback pulses and corrects the relation therebetween by modifying the oscillator frequency.

3,601,679
SOURCE OF ELECTRICAL ENERGY

Artur Braun, 6 Russelsheimerstrasse 22,, Frankfurt am main, and Heinz Luchterhand, 6239 Fucksweg 7,, Diedenbergen, both of, Germany

Continuation of application Ser. No. 634,378, Apr. 27, 1967, now abandoned. This application Dec. 30, 1969, Ser. No. 888,122
Int. Cl. H02j 7/04
U.S. Cl. 320—35 **2 Claims**

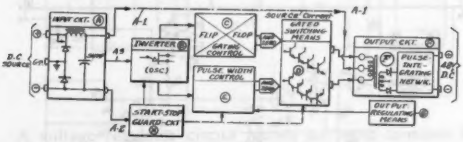


A compact portable source of electrical energy for electric razors comprising:
A. at least one electric cell having a gastight enclosure, which is rapidly chargeable at high amperages and safe from overcharging.
B. a charging device adapted to receive power from an external source and adjusted to deliver a high amperage charging current to the cell, preferably by means of a thyristor circuit, and
C. a temperature sensor in thermal proximity with said cell adapted to produce a signal when the temperature of the cell reaches a predetermined level, thereby indicating the degree of charge of the cell. The power sources of the present invention are especially useful to supply electrical energy to electric razors.

3,601,680
DC-TO-DC CONVERTER

Robert W. Beckwith, 1002 Greenfield Lane, Mount Prospect, Ill.

Filed Apr. 1, 1969, Ser. No. 812,104
Int. Cl. H02m 3/22
U.S. Cl. 321—2 **9 Claims**

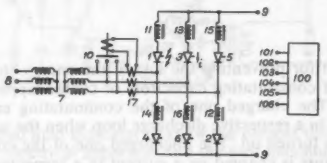


A DC to DC converter embodying transistors in compound-connected multiple arrays, providing high current gain with special means for reducing switching losses, the arrays being driven in an alternate switching action to apply power pulses to an time-delay transformer under control of pulse-forming and gating subcircuits utilizing multivibrator means controlled by an inverter to produce sets of voltage-conformed gating pulses in such a manner that the power pulses are thereby shaped for substantially constant energy content as the result of automatically adjusting the duration of the pulses in inverse proportion to the instantaneous voltage of the DC source to produce a substantially constant output voltage between predetermined limits of source voltage for a given load condition. A low-loss reflex output-voltage regulating means may additionally modify the pulse shape in response to load variations. A dual-function isolation and time-delay input circuit prevents feedback into the source and also cooperates with start-stop protective means to guard the power transistors against destructive current surges during turn-on and turnoff of the converter.

3,601,681
CONVERTER COMPRISING A RECTIFIER GROUP CONTAINING REACTORS AND AN OVER-CURRENT PROTECTION FOR THE RECTIFIER GROUP

Carl Ingvar Boksjo, Ludvika, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Feb. 24, 1969, Ser. No. 801,253
Claims priority, application Sweden, Feb. 28, 1968, 2532/68
Int. Cl. H02m 1/18
U.S. Cl. 321—11 **2 Claims**

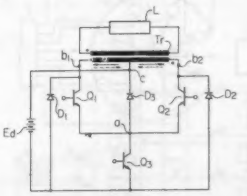


A converter is formed of a group of rectifiers arranged in series with reactors. A protection device is provided which includes a short-circuiting arrangement for the rectifiers. The reactors are provided with iron cores which are saturated at approximately 1 percent–10 percent of the short-circuiting current of the converter.

3,601,682
STATIC INVERTER FOR ENSURING SMOOTH SUPPLY OF POWER FOR LEADING AND LAGGING LOAD CURRENTS

Masahiko Iwata, and Hirosuke Imabayashi, both of Ise, Japan, assignors to Shinko Electric Co., Ltd., Tokyo, Japan

Filed June 1, 1970, Ser. No. 41,893
Claims priority, application Japan, June 10, 1969, 44/46006
Int. Cl. H02m 7/48
U.S. Cl. 321—21 **3 Claims**



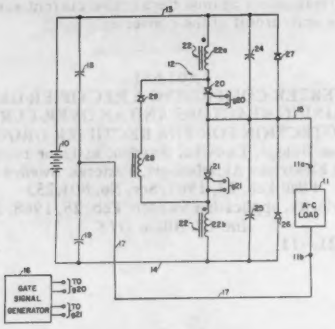
A stationary inverter having a DC power source and a transformer. Input power is applied from the source alternatingly to either half of the primary winding of the transformer through a first and a second controlled switching circuits, respectively. Diodes are used in the switching circuits for ensuring smooth supply of power for leading and lagging load currents.

3,601,683

ENERGY RECOVERY CIRCUIT FOR INVERTER

Harold J. Brown, Lorain, Ohio, assignor to Lorain Products Corporation

Filed Mar. 3, 1970, Ser. No. 16,033
Int. Cl. H02m 7/48
U.S. Cl. 321—45 R 7 Claims



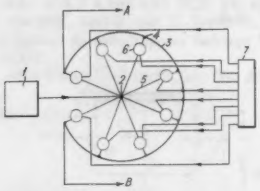
A circuit for preventing the loss of the energy stored in a plurality of commutating capacitors of center tapped source inverters. The charged one of the commutating capacitors discharges in a respective discharge loop when the associated thyristor is turned on. The uncharged one of the commutating capacitors is charged by a current in a respective charging loop, the latter current flowing in response to the flow of discharge current in the discharge loop. An inductor in the charging loop maintains a charging current through the charging one of the commutating capacitors after the discharging one of the commutating capacitors is no longer able to maintain the flow of discharge current in the discharge loop. Means is provided to interrupt the flow of current in the charging loop after the charging one of the commutating capacitors is fully charged.

3,601,684

PHASE-SHIFTING ARRANGEMENT

Charles William Earp, London, and Francis Giles Overbury, Cuffley, both of, England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 2, 1970, Ser. No. 15,531
Claims priority, application Great Britain, Mar. 13, 1969, 13249/69
Int. Cl. H02m 5/00
U.S. Cl. 321—54 7 Claims



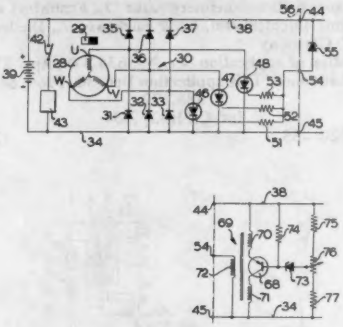
A phase-shifting arrangement wherein a source is cyclically coupled to predetermined and equally spaced points of an arcuate transmission line of predetermined length. The coupling is achieved over radial transmission lines having pulse switchable diodes which are sequentially activated at a predetermined frequency by a rotary pulse distributor. At one end of the arcuate line there is derived a positively displaced RF signal, and at the other end of the arcuate line is derived a negatively displaced RF signal.

3,601,685

VOLTAGE REGULATOR, PARTICULARLY FOR USE WITH PERMANENT MAGNET VEHICLE-TYPE AC GENERATOR-RECTIFIER COMBINATION

Edgar Kuhn, Gerlingen, Germany, assignor to Robert Bosch GmbH, Stuttgart 1, Germany

Filed Apr. 24, 1969, Ser. No. 819,018
Claims priority, application Germany, May 2, 1968, P 17 63 303.3
Int. Cl. H02p 9/00
U.S. Cl. 322—28 4 Claims



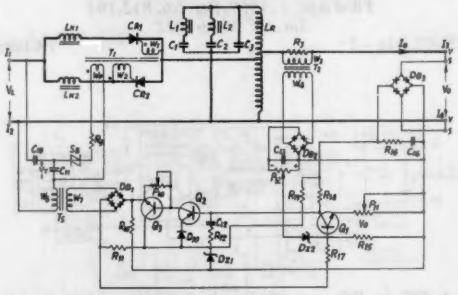
Controlled semiconductor switches, such as SCR's are connected in parallel to, and with reverse polarity to the rectifier elements of the rectifier system connected to an AC permanent magnet vehicle-type generator, which may generate high voltages upon being driven at high speed and low load. A Zener diode senses overvoltage conditions, the Zener diode being connected to trigger a blocking oscillator to oscillate and to provide sharp triggering pulses to the SCR's, the frequency of oscillations of the blocking oscillator being additional by determined by the output voltage so that the SCR's will be conductive for a longer time, during any half cycle, as output voltage rises above the predetermined value.

3,601,686

AC REGULATOR EMPLOYING A CONTROL RECTIFIER SWITCHING CIRCUIT

George A. Gautherin, Woodside, N.Y., assignor to Lambda Electronics Corporation, Huntington, N.Y.

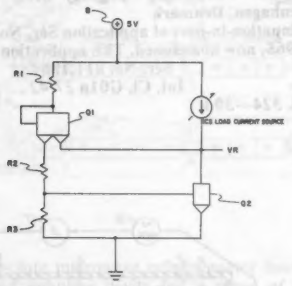
Filed Sept. 26, 1968, Ser. No. 762,934
Int. Cl. G05f 1/30
U.S. Cl. 323—9 2 Claims



An AC regulator which employs inductance, a resonant circuit and controlled rectifier switching between the input terminals connected to the AC voltage to be regulated, and the output terminals which supply the regulated AC output. The controlled rectifier switching circuit is regulated by a control system which monitors the output voltage and con-

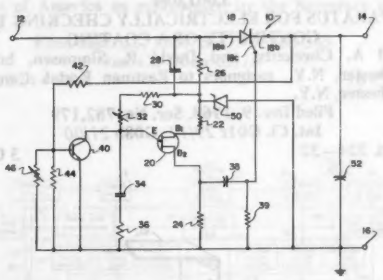
trols the firing of a pair of oppositely-polarized parallel controlled rectifiers connected in serial relationship between the input (line) and output terminals.

3,601,687
LOW-IMPEDANCE VOLTAGE SUPPLY
George K. Tu, Wappingers Falls, N.Y., assignor to Cogar Corporation, Wappingers, N.Y.
Filed June 22, 1970, Ser. No. 48,204
Int. Cl. G05f 1/56
U.S. Cl. 323—17 9 Claims



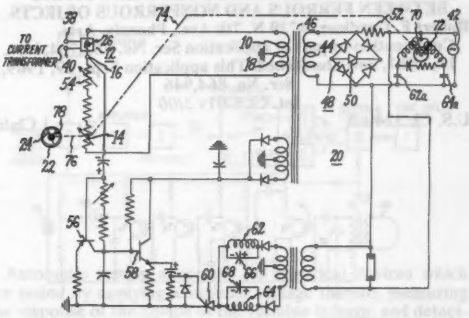
A low-impedance voltage supply for providing a relatively constant reference voltage independent of the magnitude of the current flowing through the source. The circuit includes a transistor whose base is connected to the junction of two resistors in a voltage divider network. The voltage divider network is driven from a diode connected through a resistor to a potential source. The collector of the transistor is connected to another diode which is fed through the same resistor from the potential source.

3,601,688
VOLTAGE REGULATOR FOR PERMANENT MAGNET GENERATORS
Peter Dogadko, and Forbes D. Gilchrist, both of Chicago, Ill., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Jan. 28, 1970, Ser. No. 6,367
Int. Cl. G05f 1/44, 5/00
U.S. Cl. 323—20 8 Claims



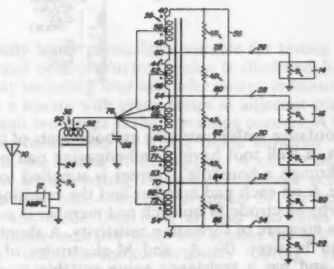
A voltage regulator circuit having an input terminal for connection to the output of a permanent magnet generator which develops a voltage at its output variable in frequency and amplitude in response to the speed of rotation of the generator. A current control device is arranged to switchably connect the output of the generator to a desired load in response to trigger pulses which are generated at desired phase angles during each half cycle of a given polarity of the applied voltage. The output of the voltage regulator may be free of an external power source, and in such case, means are provided to always establish at least a minimum current flow at the output of the regulator during no load conditions to effect continuous operation of the regulator for all voltage values at the output of the generator.

3,601,689
THERMAL LOAD INDICATOR FOR ELECTRICAL APPARATUS
Clarence J. Kettler, Lenox, Mass., assignor to General Electric Company
Filed Oct. 24, 1969, Ser. No. 869,174
Int. Cl. G05f 1/20
U.S. Cl. 323—43.5 S 8 Claims



A thermal load indicator to show the present thermal loading of an electrical apparatus and the past maximum thermal loading. A thermal model comprising a nonlinear, temperature sensitive, resistor and a heater resistor in a thermal container is immersed in the insulation liquid of the electrical apparatus to provide a representation of the "hot spot" temperature of such apparatus. The thermal model is placed electrically in a voltage divider to provide an error signal to a servomotor circuit. The servomotor drives an indicator device to provide an indication of thermal loading. The indicator in turn is coupled to a rheostat which is driven to balance the voltage divider eliminating the error signal. A drag hand on the indicator indicates the maximum past thermal loading. Switching means are provided in the indicator device when used with a tap changing apparatus to drive such apparatus to a lower ratio when such apparatus is overheated.

3,601,690
MULTICOUPLER EMPLOYING A MULTIPLE FILAR-WOUND TRANSFORMER
James F. Judson, Rochester, and Eugene A. Peterson, Penfield, both of, N.Y., assignors to General Dynamics Corporation
Filed Feb. 16, 1970, Ser. No. 11,713
Int. Cl. H02j 3/00
U.S. Cl. 323—48 9 Claims



A multicoupler is described which employs a multiple bifilar-wound transformer with outputs therefrom feeding

each of the multiplicity of loads. The transformer has a multiplicity of adjacent in series pairs of windings which are serially connected. The ungrounded terminal of an input source is connected in common to each of the adjacent pairs of windings at the connection therebetween. The windings are polarized so that the current from the source divides equally therein to as well as into the loads, whereby the power from the source is equally divided into the loads with isolation between the loads. Any unbalance is reflected into all of the windings and dissipated in balance resistors shunting each of the adjacent winding pairs.

3,601,691

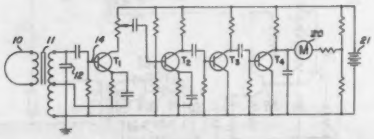
METAL DETECTOR RESPONSIVE TO SMALL METALLIC OBJECTS FOR DIFFERENTIATING BETWEEN FERROUS AND NONFERROUS OBJECTS

Robert F. Gardiner, 4729 N. 7th Ave., Phoenix, Ariz.

Continuation-in-part of application Ser. No. 682,764, Nov. 14, 1967, now abandoned. This application Sept. 29, 1969, Ser. No. 864,946

Int. Cl. G01v *3/00*

U.S. Cl. 324—3 **1 Claim**



A metal detector utilizing a Hartley oscillator having a field effect transistor therein. The output of the oscillator is connected through a series of amplifying transistor circuits to a meter. The oscillator is adjusted with sufficient Q to just oscillate; the detection of certain metals results in a change in the Q to result in a substantial decrease in the amplitude of oscillations indicated by the meter connected to the circuit.

3,601,692

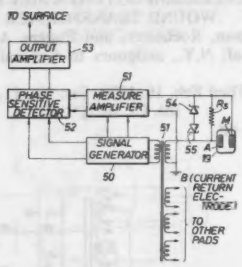
ELECTRICAL LOGGING SYSTEM UTILIZING IMPEDANCE MEANS BETWEEN SURVEY AND MEASURE ELECTRODES

Nick A. Schuster, Darien, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed May 15, 1969, Ser. No. 824,981

Int. Cl. G01v *3/18*

U.S. Cl. 324—10 **6 Claims**



In accordance with illustrative embodiments of the present invention, a well tool having wall-engaging pad members is moved through a borehole. Current is supplied to a current electrode A on each pad member and the resulting potential on a nearby electrode M on each pad member is measured to provide a measure of formation resistivity. A shunt resistor is connected between the A- and M-electrodes of each pad member and has a resistance value suitable to enable the system to provide reasonably accurate measurements when the A- and/or M-electrodes fail to make reasonably good electrical contact with the formation. However, when the contact resistance between the A- and M-electrodes is so bad that genuine resistivity measurements cannot be made, the measuring system will produce very high, off-scale measurement values to indicate such an occurrence. In another embodiment of the invention, the electrodes are energized with current at a plurality of frequencies to enable separate measurements to be made. These measurements when utilized in a desirable manner, can enable a relatively authentic resistivity measurement to be obtained.

3,601,693

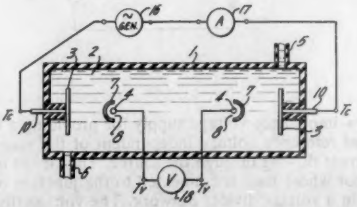
MEASURING CELL FOR MEASURING ELECTRICAL CONDUCTIVITY OF A FLUID MEDIUM

Jens Jorn Lorentzen, Bogehoj 46,, Hellerup, near Copenhagen, Denmark

Continuation-in-part of application Ser. No. 472,857, June 19, 1965, now abandoned. This application Mar. 27, 1969, Ser. No. 811,186

Int. Cl. G01n *27/42*

U.S. Cl. 324—30 R **6 Claims**



A measuring cell having current electrodes and voltage electrodes, the current electrodes being serially connected to an alternating current source and a current measuring device and the voltage electrodes being connected to a voltage measuring device whereby the ratio of the measured current flow to the measured voltage is a unique value indicative of the electrolytic conductivity of the medium. Electrical insulating means are positioned adjacent the voltage electrodes to effectively bypass the current flow around the voltage electrodes thereby screening same from the current flow. The insulating means prevents contamination and polarization of the voltage electrodes by the current flow whereby an accurate current measurement and voltage measurement is obtained.

3,601,694

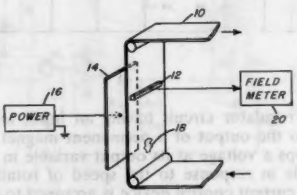
APPARATUS FOR ELECTRICALLY CHECKING THE CONTINUITY OF A COATING

Darrell A. Checketts, and David R. Simonsen, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 9, 1968, Ser. No. 782,179

Int. Cl. G01r *29/12;* **G08b** *21/00*

U.S. Cl. 324—32 **3 Claims**

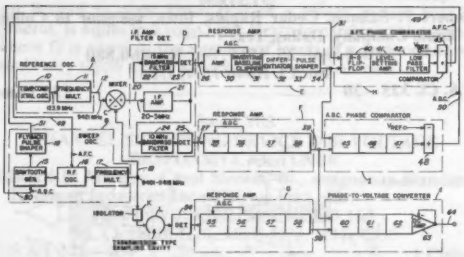


The aqueous coating on a triboelectrically chargeable web is employed, before such coating dries, to shield the charged web from a field meter, thereby to detect skips in the coating.

3,601,695
SINGLE CAVITY FREQUENCY AND BANDWIDTH STABILIZED ABSOLUTE MICROWAVE REFRACTOMETER

William A. Heile, Indianapolis, Ind., assignor to The United States of America as represented by the Secretary of the Navy

Filed Nov. 12, 1969, Ser. No. 875,704
Int. Cl. G01n *27/04*
U.S. Cl. 324—58.5 C 6 Claims

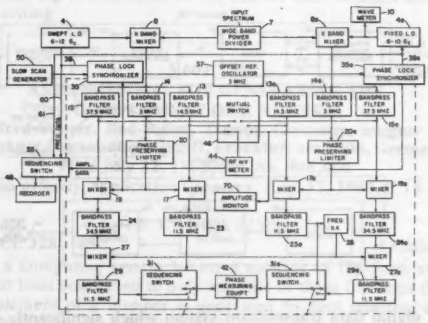


An airborne absolute microwave refractometer having an externally mounted sampling cavity fed a range of sweep frequencies from a sweep oscillator to produce a resonance response signal the phase of which is determined by the refractive index of the air within the cavity which resonance signal is converted in a direct (DC) voltage proportional to the refractive index of the air within the sampling cavity, the sweep frequencies also being mixed with the frequency of a crystal controlled reference oscillator and the resultant difference frequency fed through two band-pass filters and two channels of response amplifiers to automatic frequency control and automatic bandwidth control circuits, the outputs of which are fed back to the sweep oscillator to maintain the proper center frequency and bandwidth of the generated sweep frequency regardless of temperature and altitude variations.

3,601,696
SPECTRUM ANALYZER UTILIZING RELATIVE PHASE SLOPE DIFFERENCE OF PAIRS OF LINES IN SPECTRUM TO MEASURE RELATIVE PHASES OF INDIVIDUAL LINES

Joseph L. Chovan, Liverpool, and Earl R. Wingrove, Jr., North Syracuse, both of, N.Y., assignors to The United States of America as represented by the Secretary of the Army

Filed Sept. 23, 1969, Ser. No. 860,345
Int. Cl. G01n *23/16*
U.S. Cl. 324—77 R 10 Claims

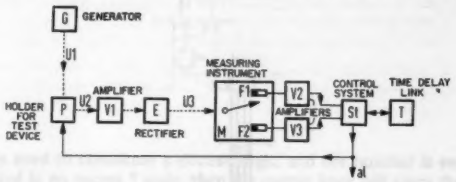


The relative amplitudes and phases of individual lines of a wide band line spectrum are determined by dividing the spectrum analyzer into two parallel branches. One branch process a fixed reference pair of lines in the spectrum and the other branch processes an arbitrary tunable line pair. This allows the instantaneous relative phase slop difference of two pairs of lines in the spectrum to be measured.

3,601,697
AUTOMATIC TESTING APPARATUS RESPONSIVE TO EXCESS OVER FIXED LIMITS

Erwin Martin, Munich, Germany, assignor to Siemens-Aktiengesellschaft, Munich, Germany

Filed Dec. 16, 1968, Ser. No. 784,027
Int. Cl. G01r *19/00, 27/00*
U.S. Cl. 324—102 5 Claims

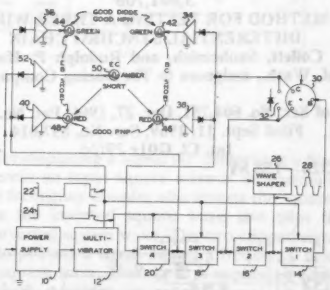


Automatic testing apparatus for electrical devices which are tested by applying a variable voltage thereto, measuring the response of the device to the variable voltage, and detecting excesses of that response with respect to limits of a tolerance zone. To avoid necessity of use of apparatus which has a cathode ray oscilloscope, the response of the device is rectified so that fixed tolerance limits may be employed. Any excess over the fixed tolerance limits is detected.

3,601,698
SEMICONDUCTOR TESTER HAVING VISUAL DISPLAY

Milton E. Thurman, Jr., 550 S.E. 26th Avenue, Hillsboro, Oreg.

Filed Jan. 21, 1969, Ser. No. 792,445
Int. Cl. G01r *31/26;* G08b *23/00*
U.S. Cl. 324—158 T 10 Claims



A continuity tester particularly suitable for testing bipolar transistors and semiconductor diodes is disclosed having a visual display including four test information indicator lamps arranged in a square with green lamps at adjacent corners of the square and red lamps at the remaining corners. A fifth indicator lamp functioning as a test mode indicator lamp is positioned in the center of the square. A circuit automatically applies an alternating current test voltage across the emitter-base and base-collector terminals of the transistor during first test mode time intervals and also turns on the second test mode indicator lamp and applies the test voltage across the collector-emitter-terminals during alternate second test mode time intervals which alternate with the first time intervals. Current flow, if any, and its direction of flow between the various terminals of the transistor causes lighting of certain of the test information indicator lamps during each

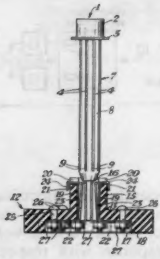
of the two test mode time intervals. The color and position of the lamps thus lighted indicates whether the transistor is a good NPN transistor or a good PNP transistor and, if not, the nature of the defect. Diodes are similarly tested by applying the test voltage across their terminals during the second test mode intervals.

3,601,699

LEAD SEPARATOR AND MOUNTING SOCKET FOR MICROMINIATURE DEVICES

Roscoe A. Norton, Jr., and William M. Carrozza, both of Batesburg, S.C., assignors to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Apr. 16, 1969, Ser. No. 816,690
Int. Cl. G01r *31/22*; **H01r** *13/20*
U.S. Cl. 324—158 F **5 Claims**



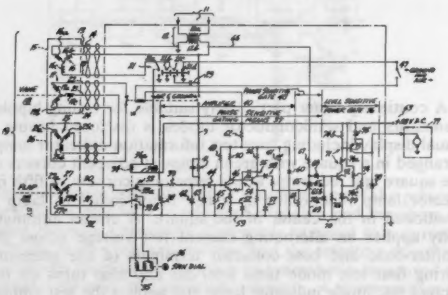
This disclosure relates to testing apparatus employing a component lead separator for receivingly entrapping yet physically exposing a portion of the relatively long conductive leads of a microminiature component. The lead separator is quickly and easily inserted into a mounting socket which includes a plurality of spring contact elements for electrically engaging the exposed portions of the conductive leads. The spring contact elements are, in turn, connected to an electrical analyzer for measuring and testing the electrical and operating characteristics of the microminiature component.

3,601,700

METHOD FOR TESTING A THREE WIRE DIFFERENTIAL SYNCHRO CHAIN

John E. Collett, Snohomish, and Rudolph P. Host, Seattle, both of, Wash., assignors to The Boeing Company, Seattle, Wash.

Division of Ser. No. 604,751, Dec. 27, 1966, Pat. No. 3,518,621.
Filed Sept. 11, 1969, Ser. No. 857,014
Int. Cl. G01r *29/16*
U.S. Cl. 324—158 SY **1 Claim**



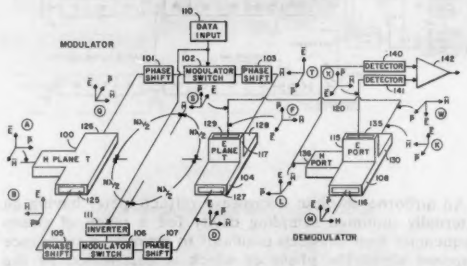
An aircraft stall warning system wherein flap and air vane controlled synchros phase shift an alternating current reference signal in response to lift air foil attitude to form a control signal that controls, by the phase shift, the amount of the reference signal gated to a level-sensitive power switch for activating preferably a pilot's column shaker warning upon the aircraft's assuming a critical angle of attack. Two alternative modes of "fail safe" testing work in integral relationship with "built-in" bias inherent in the system.

3,601,701

BI-PHASE KEYED MODULATOR-DEMODULATOR SYSTEM

Robert F. Salmon, Cedar Rapids, Iowa, assignor to Collins Radio Company, Dallas, Tex.

Filed Sept. 25, 1969, Ser. No. 860,880
Int. Cl. H04b *1/04, 1/16*
U.S. Cl. 325—30 **12 Claims**



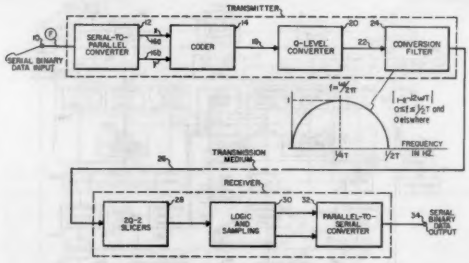
At the transmitter, a first switching means connects first symmetric ports of an E plane T junction and an H plane T junction together and a second switching means connects the other symmetric ports of the two T junctions together. Modulating means operates the two switches in an alternate manner so that an input signal supplied to the collinear port of one T junction will have either a 0° or a 180° phase shift at the collinear port of the other output T junction, depending upon which switching means is conductive. At the receiver a hybrid T junction is provided with the output signal of said output T junction being supplied to one symmetric port thereof and a constant phase reference signal to the other symmetric port. An output signal will appear either at the H port or the E port of the hybrid T junction depending upon the phase of the received signal.

3,601,702

HIGH SPEED DATA TRANSMISSION SYSTEM UTILIZING NONBINARY CORRELATIVE TECHNIQUES

Adam Lender, Palo Alto, Calif., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Mar. 17, 1969, Ser. No. 807,578
Int. Cl. H03k *13/256, 13/34*
U.S. Cl. 325—38 A **7 Claims**



A digital data transmission system which significantly increases the transmission rate of a binary data signal over a band limited transmission channel employs correlative techniques utilizing novel precoding for converting a binary

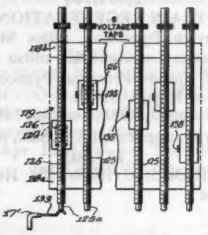
input signal into a multilevel nonbinary correlative signal which is transmitted. Each level of the transmitted signal, seven being required to achieve a factor of eight improvement in transmission rate, represents a particular combination of the original binary digits, and introduction of correlative properties at the transmitter permits the original binary data to be recovered at the receiver with standard logic circuits without reference to the past history of the waveform. The correlative properties of the transmitted signal also permit error detection without adding redundant digits at the transmitter end. The bit speed capability of the concept is not limited to eight times that of a binary system but, in general, is equal to $2\log_2 Q$ per Hertz in carrier applications, where Q is equal to the number of levels of a noncorrelative nonbinary signal and is an integer greater than two.

3,601,703

CHANNEL SELECTING DEVICE FOR VOLTAGE RESPONSIVE TV TUNER

Edward L. Midgley, Carol Stream, Ill., assignor to Standard Kollsman Industries Inc., Melrose Park, Ill.

Filed July 7, 1969, Ser. No. 839,163
Int. Cl. H04b *1/16;* **H03j** *5/02;* **H01c** *5/00*
U.S. Cl. 325—464 **1 Claim**



A television tuner arrangement is disclosed including a wide band signal selecting circuit having a solid state voltage variable capacitance selectively controllable in accordance with the level of applied voltage and a channel selector control for controlling the voltage levels applied thereto. The control illustrated herein includes a selector, actuatable to a plurality of channel selection settings, a cylindrical shaped structure providing an external surface of conductive material, and a plurality of voltage taps radially disposed about the surface of the cylindrical structure and mounted for individual movement along the conductive material. A tuning voltage bus is connected to the wide band circuit and is selectively connectable to each of the taps. The cylindrically shaped structure and taps are mounted for rotation about the axis of the structure and ganged to the selector so that a separate tap is connected to the bus for each channel selection setting.

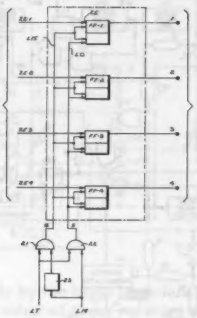
3,601,704

ARRANGEMENT FOR GENERATING THE COMPLEMENT OF A NUMBER

Manfred Seltzer, Bad-Soden, Taunus, Germany, assignor to Eichner Organisation GmbH, Frankfurt am Main, Germany

Filed July 22, 1968, Ser. No. 746,400
Claims priority, application Germany, Aug. 17, 1967, P 15 49 408.3
Int. Cl. H03k *21/06*
U.S. Cl. 328—46 **4 Claims**

In a computing system having a number of flip-flops and output lines connected to only one side of these flip-flops the complement of a number is generated by first resetting all flip-flops, then entering the number whose complement is to be found into said flip-flops, and subsequently switching each of said flip-flops to the opposite stable state, the signals thus appearing on the output lines constituting the 1's complement of the number set into the flip-flops. If four flip-flops



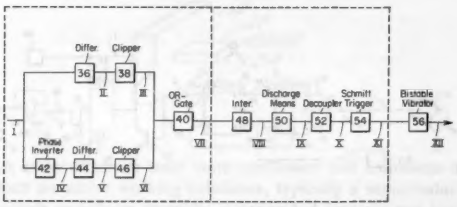
are used to constitute a decade digit, and the number is entered in an excess 3 code, then the output lines will carry the 9's complement of the number.

3,601,705

FREQUENCY MULTIPLICATION AND DISPLACEMENT

Reimar Germann, and Kurt Wiederwohl, both of Graz, Austria, assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 626,755, Mar. 29, 1967, Pat. No. 3,471,763
Filed Apr. 2, 1969, Ser. No. 842,038
Int. Cl. H03k *5/159*
U.S. Cl. 328—55 **3 Claims**



A circuit for displacing a signal 90° comprising a frequency doubler wherein an input square wave is differentiated and clipped. The frequency doubler also inverts the square wave, differentiates the inverted square wave and clips the differentiated inverted square wave. The two clipped signals are then added to provide a signal having a frequency twice that of the input square wave. This signal is applied to a sawtooth generator which provides an output signal to actuate a Schmitt trigger. The Schmitt trigger generates a square wave having a frequency twice that of the input square wave for actuating a bistable vibrator. The output of the bistable vibrator is a square wave displaced 90° from the input square wave.

3,601,706

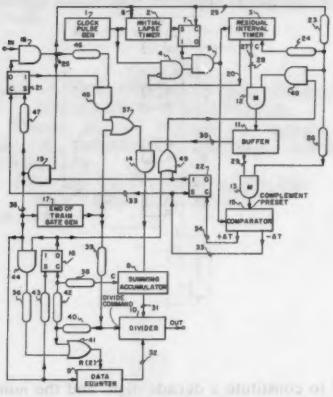
PULSE INTERVAL DECODER

Frederick H. Battle, Jr., and Edward Savage, both of Dix Hills, N.Y., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Mar. 2, 1970, Ser. No. 15,394
Int. Cl. H03k *13/00;* **G01s** *1/44*
U.S. Cl. 328—119 **6 Claims**

A system for determining the average length of intervals between pulses in a finite train, including a pulse counter,

two alternately operating interval timing devices, an arithmetic divider, and storage and logic circuits. An interval-adaptive track gate arrangement provides discrimination against spurious pulse intervals.

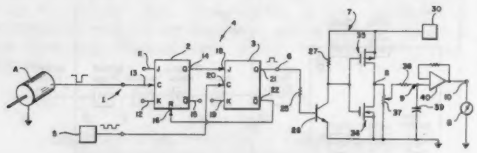


3,601,707

FREQUENCY TO DIRECT CURRENT CONVERTER

Douglas M. Bauer, Danvers, Mass., assignor to General Electric Company

Filed Aug. 21, 1969, Ser. No. 852,041
Int. Cl. H03k *5/20, 9/06*
U.S. Cl. 328—141 **7 Claims**



A frequency to direct current converter is provided in which an input signal, which may be a sinusoidal wave or a pulse train, is applied to a first bistable logic circuit to determine its state. The logic circuit is utilized to provide an input indicative of an input signal to a second bistable logic circuit to which timing pulses are applied from an external clock source. The timing pulses initiate a change in the states of the bistable logic circuits so that a direct current pulse of uniform width is produced for each input wave applied to the first bistable circuit. The direct current pulses may be averaged or utilized to control a chopper circuit to produce a direct current output indicative of the frequency of the input signal.

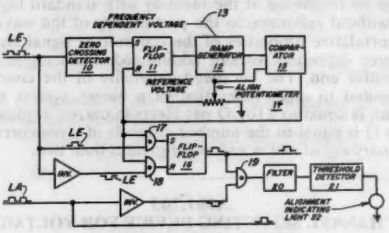
3,601,708

FREQUENCY INDEPENDENT CONSTANT PHASE SHIFT SYSTEM

Samuel Stempler, Brooklyn; Carl A. Listl, New Hyde Park, and Eugene L. Boronow, Jamaica, all of, N.Y., assignors to Kollsman Instrument Corporation, Syosset, N.Y.

Filed Feb. 16, 1970, Ser. No. 11,387
Int. Cl. H03b *3/04*
U.S. Cl. 328—155 **4 Claims**

The system provides phase alignment of a pair of frequency variable symmetrical pulsations of repetitive waveform having the same instantaneous frequency. Facility is described and illustrated for comparing the relative phase of the two-wave trains and for phase shifting one of the wave trains relative to the other. The phase shift is adjustable over a broad range and once the phase shift is set, the set remains constant and independent of changes in the frequency of the wave trains.

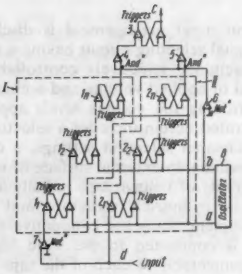


3,601,709

A PULSE TRAIN REGENERATION SYSTEM

Vladimir Nikolaevich Dyachkov, ulitsa Stendera I, kv. 1; Zhanna Nikolaevna Lupaschenko, ulitsa Berznieki-Upisha, 10, kv. 8, and Ljubov Petrovna Pyatkina, ulitsa Lenina, 236, kv. 36, all of Riga, U.S.S.R.

Filed Aug. 2, 1968, Ser. No. 749,851
Claims priority, application U.S.S.R., Aug. 9, 1967, 1,177,905
Int. Cl. H03k *5/00;* **H03b** *1/04;* **H04b** *1/10*
U.S. Cl. 328—164 **3 Claims**



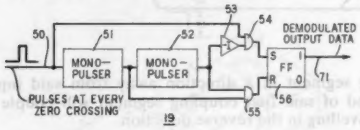
A pulse train regeneration system for regenerating a control pulse train, including at least two shift registers. Each of the shift registers is provided with at least a last stage, the last stage including flip-flops, an inverter, two coincidence circuits, each of the coincidence circuits being provided with at least two inputs, one input of each of the two inputs being connected to the output of a respective one of the shift registers, a train of the first of said two inputs timing pulse supplied to the input of the last stage and being supplied through the inverter to the first input of said two coincidence circuits timing pulse, the second timing pulse being time delayed with respect to the timing pulse train of the first inputs and being supplied to the other two inputs of the coincidence circuits, the control pulse train being supplied to the last stage and an output flip-flop having at least two inputs, each of the two inputs of the output flip-flop being connected to the output of a respective one of the two coincidence circuits.

3,601,710

DIGITAL DETECTOR FOR BINARY FSK SIGNALING

Michael A. Morra, Freehold, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Aug. 22, 1969, Ser. No. 852,309
Int. Cl. H03k 9/00
U.S. Cl. 329—104 6 Claims



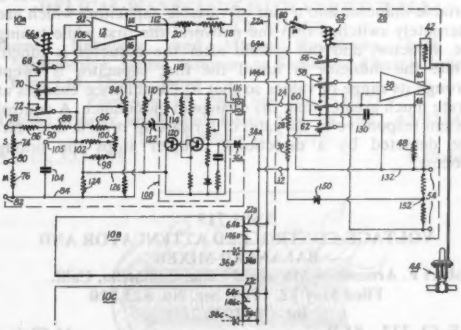
A digital detector for a synchronous, low bit-rate signaling systems comprises monostable timing devices and logic components to replace the low-pass filter and slicer circuits of the conventional zero-crossing detector. The detection scheme is dependent upon a comparison of zero-crossing intervals and an optimum threshold interval chosen to minimize synchronous distortion. The maximum theoretical bit rate is equal to the sum of the mark and space frequencies, corresponding to 50 percent peak synchronous distortion.

3,601,711

MULTIPLE-CONTROLLER SYSTEM WITH IMPROVED AUTOMATIC-TO-MANUAL TRANSFER MEANS

David A. Richardson, Sheldonville, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Filed Apr. 12, 1967, Ser. No. 630,321
Int. Cl. H03f 1/00
U.S. Cl. 330—1 A 10 Claims



Industrial process control system wherein a plurality of individual electronic process controllers are provided responsive to respective process variables to produce corresponding output signals the largest one of which is automatically selected by a valve control station so as to determine the positioning of a process valve, the system including transfer means for switching from automatic operation to manual operation or vice versa without requiring any precedent balancing step and without upsetting the process.

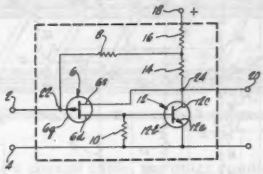
3,601,712

SOURCE FOLLOWER

Shmuel Elazar, Camarillo, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Continuation of application Ser. No. 387,059, Aug. 3, 1964, now abandoned. This application Dec. 17, 1968, Ser. No. 812,500
Int. Cl. H03f 3/04
U.S. Cl. 330—24 10 Claims

An impedance-matching circuit utilizing a field-effect transistor connected to a solid-state amplifying device. A resistive feedback path is provided from the output of the amplifying device to the input of the field-effect transistor and its value, together with the value of the biasing resistors, are chosen such that the input impedance to the circuit is determined almost entirely by the input impedance of the field-effect transistor. The value of these resistors are also selected such that the gain of the circuit is held at a value of slightly less than 1.0.

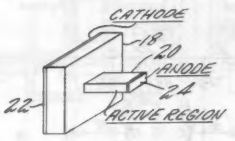


3,601,713

SHAPED BULK NEGATIVE-RESISTANCE DEVICE OSCILLATORS AND AMPLIFIERS

Peter R. Solomon, West Hartford; Melvin P. Shaw, West Hartford, and Harold L. Grubin, Bloomfield, all of, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Feb. 6, 1969, Ser. No. 797,055
Int. Cl. H03b 7/14
U.S. Cl. 331—107 G 13 Claims



A class of active solid state oscillators and amplifiers in which an active working substance, typically a semiconductor such as gallium arsenide, is connected between two low-resistance contacts. The working substance is shaped or sculptured in a manner to alter the electric field distribution in the working substance and to maintain the active region of the device away from the controlling electric fields of the contacts.

3,601,714

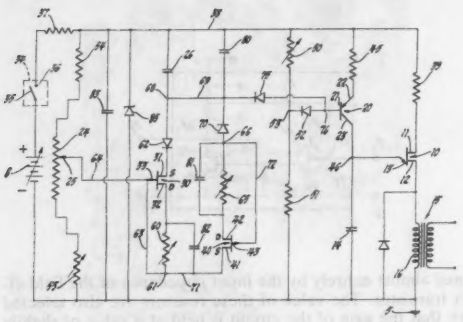
UNIJUNCTION RELAXATION OSCILLATOR PROVIDING LINEAR POTENTIAL TO FREQUENCY CONVERSION

Conrad P. Vespie, Brookville, and Elgin J. Karklins, Kettering, both of, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 11, 1970, Ser. No. 10,517
Int. Cl. H03k 3/26
U.S. Cl. 331—111 5 Claims

A potential controlled oscillator having an output frequency proportional to the magnitude of an applied potential. The capacitor of a unijunction transistor relaxation-type oscillator circuit is charged linearly from a direct current potential source through a transistor connected in a constant current circuit configuration. The potential applied across the base-emitter electrodes of the transistor is determined by the magnitude of the charge on a control capacitor which is charged from the direct current potential source through a potentiometer which determines the magnitude of the charge. So

that the oscillator frequency varies linearly with a change of potentiometer setting, the capacitor charging and discharging



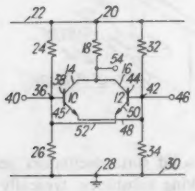
circuits include separate field effect transistor constant current circuits.

3,601,715

TRANSFORMERLESS DOUBLE-BALANCED MODULATOR APPARATUS

Bruce G. Pringle, Ottawa, Ontario, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Oct. 30, 1969, Ser. No. 872,483
Int. Cl. H03c *1/42*
U.S. Cl. 332—31 T **4 Claims**



A transformerless double-balanced modulator circuit using two transistors having a common collector load with electrical interconnections between the electrodes of the two transistors, a carrier voltage being, in use, applied to the base electrode of one of said transistors and an information signal voltage being applied, in use, to the base electrode of the other of said transistors, a modulated output being obtained at the common collector load. If desired, a transistor driver stage may be provided for each of said two transistors.

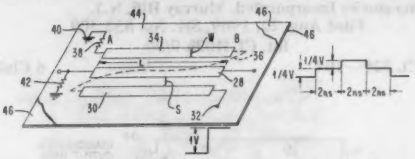
3,601,716

STRIPLINE DIRECTIONAL COUPLING DEVICE

Murray H. Bolt, Raleigh, N.C.; Howard H. Nick, Potomac, Md., and Edward C. Uberbacher, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 24, 1969, Ser. No. 887,964
Int. Cl. H01p *3/08, 5/14*
U.S. Cl. 333—10 **11 Claims**

A segment of a main transmission line is located equidistant between and parallel to a first and second coupling segment. The first coupling segment has an input terminal at one end thereof for connection to a stub line. The second coupling element has a terminating impedance located at the end thereof opposite said input terminal end of said first coupling segment. A conductor connects the other opposite ends of said first and second coupling segments so that a pulse travelling thru said main line segment or said first



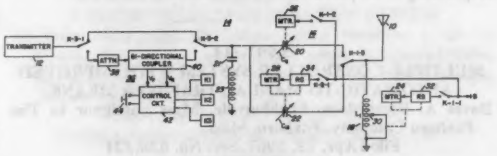
coupling segment in a direction away from said input terminal end of said first coupling segment will couple to the other travelling in the reverse direction.

3,601,717

SYSTEM FOR AUTOMATICALLY MATCHING A RADIO FREQUENCY POWER OUTPUT CIRCUIT TO A LOAD

John A. Kuecken, Pittsford, N.Y., assignor to General Dynamics Corporation

Filed Nov. 20, 1969, Ser. No. 878,507
Int. Cl. H03h *7/40*
U.S. Cl. 333—17 **16 Claims**



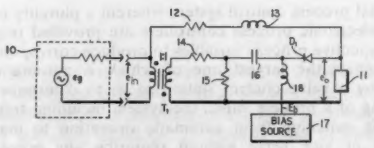
An automatic antenna coupler is described which uses a variable inductor and a pair of variable capacitors which are alternately switched into the network; the first while tuning the inductor, and the second after the inductor is tuned. While the inductor is tuned the first capacitor is swept through its range of values so that its capacitance changes at a rate much greater than the change in inductance. A control system responsive to the ratio of forward to reverse line voltage detected by a directional coupler stops the tuning process.

3,601,718

VOLTAGE-CONTROLLED ATTENUATOR AND BALANCED MIXER

Robert F. Arnesen, 4 Mansfield Lane, Camarillo, Calif.

Filed May 12, 1969, Ser. No. 823,820
Int. Cl. H03h *7/24*
U.S. Cl. 333—81 R **11 Claims**



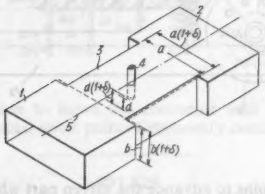
A voltage-controlled attenuator is disclosed for signal gain control, modulation and switching, using an inverting transformer coupled to a load through a voltage-dividing network and a diode so forward biased that it attenuates the incoming signal by combining the effects of variable voltage division and signal cancellation. In one embodiment, the diode attenuates the inverted signal sufficiently to cancel a desired amount of the input signal connected to the load from the transformer primary by a resistor and a phase-compensating network if necessary. In another embodiment, the uninverted signal is attenuated and the inverted signal is controlled in amplitude by signal cancellation.

3,601,719

TEMPERATURE-COMPENSATED WAVEGUIDE RESONATOR

Kenneth George Hodgson, Loughton; George Frederick Craven, Harlow, and Raymond Richard Thomas, Harlow, all of, England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 9, 1969, Ser. No. 865,110
Int. Cl. H01p 7/06; H03n 13/00; H01p 1/30
U.S. Cl. 333—82 BT 2 Claims



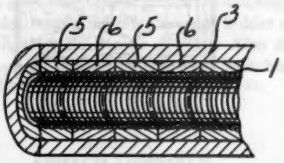
An evanescent H-mode rectangular waveguide resonator having a tuning screw mounted on one broad wall is temperature compensated by having said screw physically penetrate close to the opposite broad wall of said waveguide. Said penetration provides significant end-loading capacitance. In one preferred embodiment, said screw is offset from the longitudinal centerline of said waveguide to achieve both the required tuning capacitance and the required penetration. In another preferred embodiment, to further improve temperature compensation, a silver-plated Swedish iron screw having a lower coefficient of expansion than the material of the waveguide, (i.e., copper) penetrates close to the opposite broad wall.

3,601,720

HELICAL WAVEGUIDE WITH VARIED WALL IMPEDANCE ZONES

Tsuneo Nakahara, and Masao Hoshikawa, both of Nishinomiya, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Aug. 13, 1968, Ser. No. 752,271
Claims priority, application Japan, Aug. 16, 1967, 42/52543
Int. Cl. H01p 3/12, 1/16
U.S. Cl. 333—95 9 Claims



Manufacturing methods of the helical waveguide that the wall impedance of the wall structure of the waveguide is alternated discontinuously or continuously in the direction of the axis of the helix by means that jacket or tape of insulating or lossy material having diverse dielectric constants, or roving of lossy material is located on the helix of the waveguide to make the wall structure having the alternated wall impedance and their products.

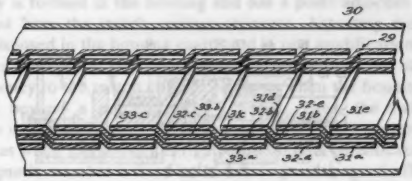
3,601,721

LOW LOSS COAXIAL CONDUCTOR USING OVERLAPPED AND INSULATED HELICAL WOUND STRIPS

Raymond Justice, Palos Park, Ill., assignor to Justice Associates, Incorporated

Filed Feb. 14, 1969, Ser. No. 799,393
Int. Cl. H01p 3/06, 7/04; H01b 7/26
U.S. Cl. 333—96 9 Claims

A low loss transposed high frequency conductor comprising an overlapped spiral web. The web is continuous, thin and flat and is formed into n layers by overlapping adjacent turns by the fraction $(n-1/n)$. Each layer is insulated from adjacent layers. The conductor can be utilized as the inner



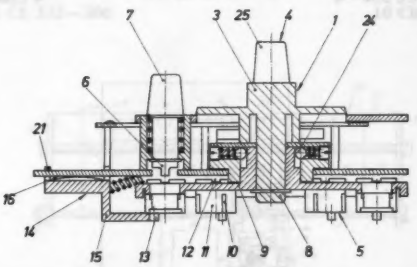
conductor of a coaxial cable, the outer conductor of a coaxial cable, a tuning member in a coaxial cavity or as an inductor.

3,601,722

TUNING ARRANGEMENT FOR STORABLE STATION SELECTION IN TELEVISION RECEIVERS

Helmut Rolf, Nurnberg, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 4, 1969, Ser. No. 813,454
Claims priority, application Germany, May 4, 1968, P 17 66 325.1-35
Int. Cl. H03j 5/04, 5/08
U.S. Cl. 334—7 5 Claims



A tuning arrangement for television receivers including a support, a rotary selector having predetermined fixed positions into which said selector may be set mounted on said support, a first tuning button having a beveled gear at one end thereof mounted on said selector, a plurality of stationary potentiometers mounted concentrically with said selector, one being opposite each of said fixed positions and each having a gear associated therewith for engagement with, and adjustment by said button, said button being movable into and out of engagement with the potentiometers, and a second tuning button, having a screwdriver end, mounted on said support, a plurality of rotatable cams controlling the position of a range selector switch, said cams mounted concentrically with said selector, one being opposite each of said fixed positions and being associated with one of said stationary potentiometers, and each having slot means associated therewith for engagement with, and adjustment by said second button, said second button being movable into and out of engagement with said cams.

3,601,723

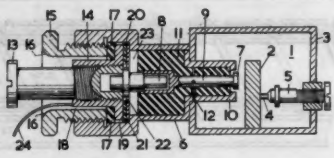
ELECTRONIC TUNING APPARATUS FOR MICROWAVE CIRCUITS

Albert Henry Johnson, Christchurch, England, assignor to National Research Development Corporation, London, England

Filed Oct. 7, 1969, Ser. No. 864,498
Claims priority, application Great Britain, Oct. 8, 1968, 47,655/68
Int. Cl. H03j 3/06
U.S. Cl. 334—15 6 Claims

Tuning apparatus for a resonant cavity comprises a varactor diode capacitively coupled into the cavity by means of a

half-wavelength of, or *n* half-wavelengths of, a transmission line, and a return path for the varactor current is provided by an inductive member connected a quarter-wavelength from



one end of the line. Bias current supply leads, with a bypass capacitor connected across them, are connected either in series with the varactor diode or in series with the inductive member. The inductive member may be a spiral wire.

3,601,724

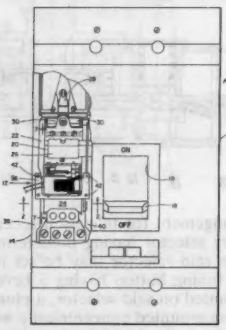
ELECTRIC CIRCUIT BREAKER HAVING REMOTELY OPERABLE CONTACT ARM CARRIER LATCHING MEANS

Robert E. Dietz, and Beryl W. Layton, both of Cedar Rapids, Iowa, assignors to Square D Company, Park Ridge, Ill.

Filed Nov. 18, 1969, Ser. No. 877,668

Int. Cl. H01h *77/00*

U.S. Cl. 335—8 **4 Claims**



Latching means for holding the movable contact arm carriers of a multipole molded-case electric circuit breaker in an open or OFF position while the operating handle is held in an ON position. The latching means is electrically operable from a remote point to release the contact arm carriers and allow them to move to ON position toward which they are biased by a spring of a toggle mechanism when the operating handle is in ON position.

3,601,725

STEPPING SWITCH

Fritz Hartmann, 852 Im Henschlaze, Erlangen-Sieglitzhof, Germany

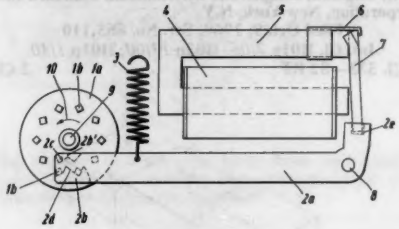
Filed July 28, 1969, Ser. No. 845,469

Claims priority, application Germany, July 30, 1968, P 17 75 334.3

Int. Cl. H01h *51/08*

U.S. Cl. 335—140 **9 Claims**

A stepping switch comprising a driving part including a magnet, an armature and a lever supported at one end and having oppositely disposed claws at its free end that is movable transversely of a driven part that presents pins, which are engaged by wedged flanks of said claws which have smooth sliding surfaces that snugly engage the smooth sliding surfaces of the pins to advance the driven part while the wear on the sliding surfaces is so negligible as to permit the use of plastic components.



3,601,726

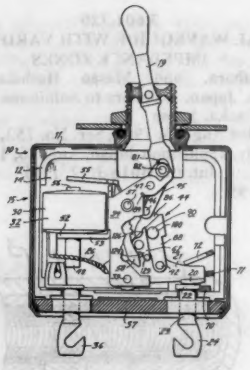
MODIFIED TOGGLE ASSEMBLY FOR CIRCUIT BREAKERS

Ronald Nicol, Trenton, N.J., assignor to Heinemann Electric Company, Trenton, N.J.

Filed Mar. 4, 1970, Ser. No. 16,526

Int. Cl. H01h *9/20*

U.S. Cl. 335—167 **4 Claims**



An electromagnetic circuit breaker for opening a set of contacts upon the occurrence of predetermined conditions, having an automatically resettable linkage mechanism. The linkage mechanism includes a toggle assembly having a latch which is biased to the latching position and whose movement to the latching position is stopped by the pin which connects the two links of the toggle assembly to each other.

3,601,727

MAGNETIC SNAP ACTION SWITCH

Harold W. Hults, New Berlin, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

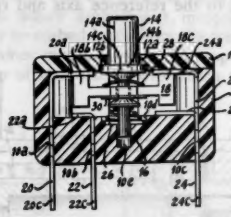
Filed Mar. 9, 1970, Ser. No. 17,629

Int. Cl. H01h *5/02, 5/30*

U.S. Cl. 335—205 **5 Claims**

A combination spring and magnetic snap action switch of the momentary type. It employs spaced-apart pairs of stationary contacts and a movable contactor which are formed of magnetic materials. A spring-biased reciprocably movable

plunger carrying convexly curved spring washers on opposite sides of the contactor acts upon movement of the plunger in



opposite direction to move the contactor with snap action between the spaced-apart pairs of stationary contacts.

3,601,728

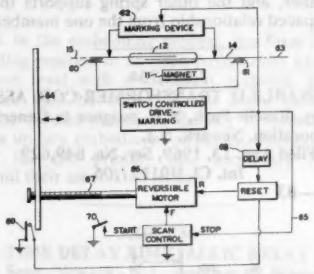
PRINTED CIRCUIT KEY IMPROVEMENT

John Paul Jones, Jr., Wayne, and Peter A. Peroni, Pottstown, both of, Pa., assignors to Navcor, Inc., Norristown, Pa.

Filed Oct. 3, 1969, Ser. No. 863,496

Int. Cl. H01h *11/00, 45/02*

U.S. Cl. 335—205 **9 Claims**



Magnetic reed switches have their operation strokes standardized by locating the reeds in variable positions relative to a magnet affixed in a movable structure depending upon their individual switching characteristics. Switching structure disclosed includes both a movable magnet holder and a reed holder for referencing the stroke position. Also disclosed is an automatic system for referencing reed switches out of a variable batch for identical operating conditions.

3,601,729

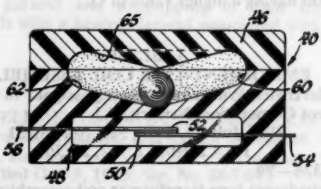
SWITCH ASSEMBLY

Lars J. Hierta, Westland, Mich., assignor to Western Sales Corp., Southfield, Mich.

Filed Nov. 3, 1969, Ser. No. 873,535

Int. Cl. H01h *36/00*

U.S. Cl. 335—205 **10 Claims**



A switch assembly for use in an environment requiring automatic switch operation under certain conditions, as when the switch assembly, or the body on which the switch is mounted, is tilted or changed in position beyond a predetermined amount. The assembly includes a housing in which is mounted the switch, preferably of the normally open type. A cavity is formed in the housing and has a point adjacent but spaced from the switch contact elements. Actuating means are disposed in the housing cavity and in one modification includes a magnetic member that moves away from the close adjacency to the switch contact elements when the housing is tilted beyond a predetermined amount. Thus, the switch opens until the magnetic member returns to its adjacent position, as when the housing is righted. In another modification, a magnetic member is fixed in the housing and magnetic-flux-deflecting means are pivotally mounted in the housing and in the cavity. As the housing is tilted, the deflecting means pivots into position between the magnetic member and the switch, thus deflecting the magnetic flux field. The magnetic attraction is removed and the switch opens,. When the housing is righted, magnetic flux is again established to the switch to close the switch contacts.

3,601,730

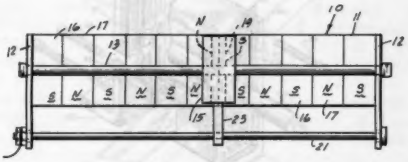
MAGNETIC-DETENTING CONTROL

Jack C. Cookerly, 7655 Atoll Ave., North Hollywood, Calif., and George Robert Hall, 13613 Huston St., Sherman Oaks, Calif.

Continuation-in-part of application Ser. No. 662,628, Aug. 23, 1967. This application Mar. 3, 1970, Ser. No. 16,107

Int. Cl. H01f *7/02*

U.S. Cl. 335—306 **10 Claims**



Magnetic-detenting control for resistance strip, switches, valves or other devices in which it is required that the control be in increments and that there be a pause at each increment. The positions of the control are indexed by a series of magnets mounted on a base and alternately arranged in opposite polarity. A manually operable slider is guided for movement along the magnets and forms a support for a detenting magnet. The detenting magnet is arranged with its magnetic field flowing in the direction of movement of the slider. As the detenting magnet is moved along the series of stationary magnets, a dwell occurs as opposite poles come into registry with each other. The points at which the detent actions or swells take place can thus be relatively closely spaced and calibrated. The position of the slider can readily be determined visually, and the detent actions can be determined by feel.

3,601,731

COIL FORM FOR A MAGNETIC DEFLECTION YORK

William R. Christiana, Saugerties, and Joseph F. Hevesi, Hurley, both of, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

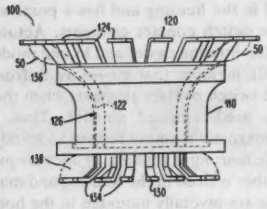
Filed Jan. 30, 1970, Ser. No. 7,275

Int. Cl. H01f *7/00*

U.S. Cl. 335—210 **9 Claims**

A magnetic deflection yoke has internal longitudinal slots and two end caps. Each of the end caps has hook members to allow a deflection yoke to be wound with each wire in each

coil being precisely positioned to reduce deflection distortion. The core may be cylindrical or tapered in shape. A flattened trumpet-shaped wire feeder is used for feeding wire under tension between the end caps and hooking the wire behind them.

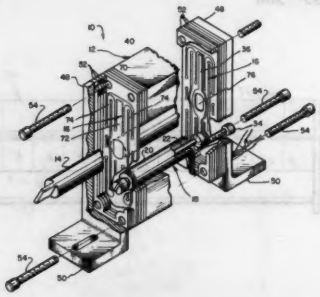


3,601,732

LINEAR VARIABLE ELECTRICAL TRANSDUCER

Ronald L. Samuels, Palos Verdes Peninsula, and Josef E. Friedericks, Pacific Palisades, both of, Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Sept. 29, 1969, Ser. No. 861,819
Int. Cl. H01f 21/06
U.S. Cl. 336—30 **13 Claims**



A linear variable electrical transducer characterized by high accuracy and sensitivity, compact size, relatively long stroke, very low breakaway friction, and rugged damage and clog resistant construction. The transducer has a housing containing a flexure-supported coupling shaft and an electrical sensor laterally displaced from and operatively connected to the shaft for producing an electrical signal representing the position of the shaft relative to the housing. The flexure supports provide stiff radial positioning of the coupling shaft while requiring very low force for axial movement and no breakaway resistance of the shaft. The sensor is isolated from all external loads applied to the coupling shaft, thus permitting the use of a relatively fragile miniature sensor to substantially reduce the overall size and weight of the transducer. A novel flexure configuration for the transducer characterized by a high aspect ratio.

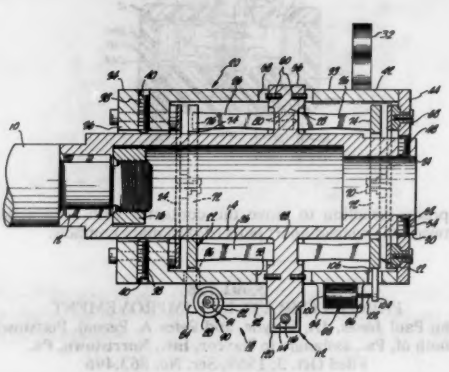
3,601,733

AIRCRAFT CONTROL WHEEL FORCE SENSOR

Edward Kazmarek, Reseda, Calif., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Sept. 17, 1969, Ser. No. 858,807
Int. Cl. H01f 21/02
U.S. Cl. 336—30 **18 Claims**

A control wheel force sensor has an inner member, an outer member and a middle member disposed in alignment along a reference axis. A spring that is flexible in a rotational direction about the reference axis and rigid in a translation direction parallel to the reference axis couples the middle member to one of the other members, a cylindrical bellows aligned with the axis couples the middle member to the remaining member. The bellows is flexible in a translational direction parallel to the reference axis and rigid in a rotational direction about the reference axis. The bellows supports the remaining member in spaced relationship from the middle member, and the other spring supports the middle member in spaced relationship from the one member.

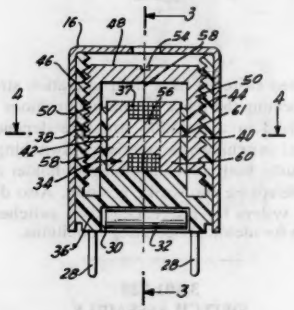


3,601,734

HIGH Q TUNABLE IF TRANSFORMER COIL ASSEMBLY

John Chesney, Roselle Park, N.J., assignor to General Instrument Corporation, Newark, N.J.

Filed Aug. 13, 1969, Ser. No. 849,629
Int. Cl. H01f 21/06
U.S. Cl. 336—83 **1 Claim**



In a conventional tunable transformer coil assembly a coil is wound on a core, and a magnetic tuning cup is movable relative to the core along an axis parallel to the axis of the core to vary the inductance of the transformer. In the present invention, the axis along which the cup moves is substantially at right angles to the axis of the core. This construction provides a coil having a higher value of Q.

3,601,735

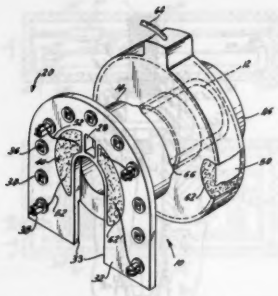
EMBEDMENT-TYPE COIL ASSEMBLY

Lucian Bercovici, Wilbraham, Mass., assignor to General Instrument Corporation, Newark, N.J.

Filed July 15, 1970, Ser. No. 55,151
Int. Cl. H01f 15/02, 27/30
U.S. Cl. 336—96 **18 Claims**

An embedment-type transformer coil assembly is disclosed particularly suited for a transformer application, together with a novel method and coil form for embedding the primary and secondary transformer windings within a unitary embedment material. An inner elongated tubular member is

connected by means of a top panel skeletal structure to an outer shorter tubular member defining a minor molding space therebetween. The top panel skeletal structure defines spaces through which embedment material can be conducted, thereby to embed leads from the windings which extend into the minor molding space. The top panel may comprise a plurality of terminal lugs to which the leads can be



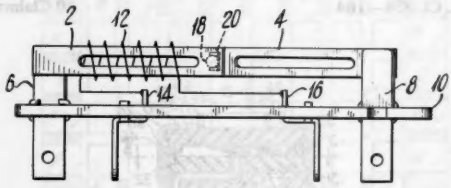
connected. In the embedding process, the form is placed in an upstanding position in an open mold cavity which is filled to its upper level with embedment material. Embedment material can then be added to the minor molding space between the tubular members, thereby to embed the leads and form a unitary embedment structure, thus providing full protection for the primary and secondary transformer windings and their associated leads.

3,601,736

TIME DELAY BIMETALLIC RELAY

Manlio O. Sepe, Newark, N.J., assignor to Wagner Electric Corporation

Filed June 23, 1969, Ser. No. 835,564
Int. Cl. H01h *37/10, 37/52, 61/04*
U.S. Cl. 337—101 **3 Claims**



A relay employing two slotted bimetallic blades mounted substantially parallel and overlapping at their free (unmounted) ends with a heater element associated with one of the blades.

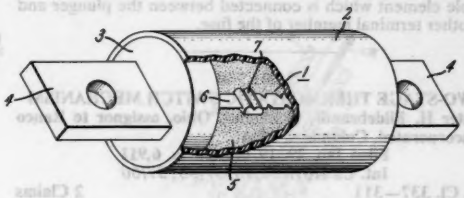
3,601,737

FUSE ELEMENTS FOR DC INTERRUPTION

Leslie L. Baird, Swarthmore, and Ernest H. Bogert, Media, both of, Pa., assignors to General Electric Company

Filed Oct. 9, 1969, Ser. No. 865,047
Int. Cl. H01h *85/10, 85/18, 85/38*
U.S. Cl. 337—159 **6 Claims**

A current-limiting fuse having a silicon rubber arc constricting structure encapsulating certain portions of the link having reduced cross-sectional areas. By confining and constructing the arc within the structure, the chance of creation of deleterious shunt current paths is minimized. The method



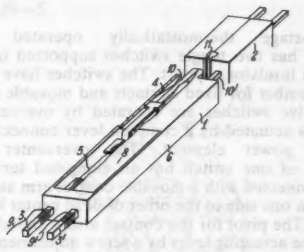
disclosed encompasses flowing a still vicous room temperature vulcanized silicon rubber over a reduced portion of the fuse link to encapsulate the portion.

3,601,738

PROTECTION UNITS AND MOUNTING TOOL

Oscar Wuyts, Bevern-Wass; Herman Johan Kruse, Atwerp, and Sylvere Jules Staelens, Atwerp, all of, Belgium, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 21, 1968, Ser. No. 777,716
Claims priority, application Netherlands, Nov. 27, 1967, 6,716,075
Int. Cl. H01h *85/12, 85/20, 85/48*
U.S. Cl. 337—197 **1 Claim**



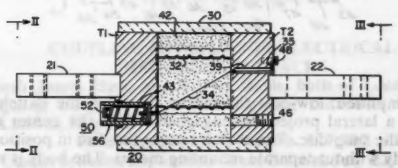
A housing to support fuse wires is provided for a miniature main distribution frame. The housing is made compatible with printed circuit card techniques. A tool is supplied to enable the mounting of fuse wires into the fuse housing.

3,601,739

INDICATING MEANS FOR FUSES

Donald D. Blewitt, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 31, 1969, Ser. No. 889,508
Int. Cl. H01h *85/30*
U.S. Cl. 337—244 **12 Claims**



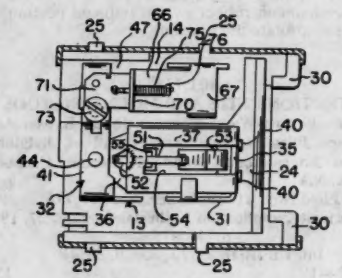
A fuse comprising an electrically insulating, generally tubular casing having a pair of terminal members mounted on the casing adjacent to the opposite ends of the casing and one or more fusible elements connected between the terminal members. A plunger is disposed in an axially extending

opening in one of the terminal members and is biased outwardly from the opening by an associated spring. The plunger is normally restrained from movement under the influence of the spring by a restraining wire or high resistance fusible element which is connected between the plunger and the other terminal member of the fuse.

3,601,740
TWO-STAGE THERMOSTATIC SWITCH MECHANISM

Gunter H. Fildebrandt, Columbus, Ohio, assignor to Ranco Incorporated, Columbus, Ohio

Filed Jan. 29, 1970, Ser. No. 6,911
Int. Cl. H01h 37/18, 37/38, 37/60
U.S. Cl. 337—311 2 Claims

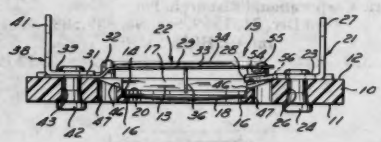


A two-stage thermostatically operated switching mechanism has two toggle switches supported on different levels of an insulator support. The switches have a common terminal member for fixed contacts and movable contacts of the respective switches are operated by overcenter spring mechanisms actuated by a common lever connected with an expansible power element. The overcenter operating mechanism of one switch has an elongated tension spring which is connected with a movable control arm and is caused to shift from one side to the other of dead center by the common lever. The pivot for the contact arm is shiftable towards and from the actuating lever by a screw adjustment.

3,601,741
THERMOSTAT

Ronald L. Holden, Mansfield, Ohio, assignor to Therm-O-Disc, Incorporated, Mansfield, Ohio

Filed Aug. 21, 1969, Ser. No. 851,966
Int. Cl. H01h 37/04, 37/28, 37/54
U.S. Cl. 337—380 11 Claims

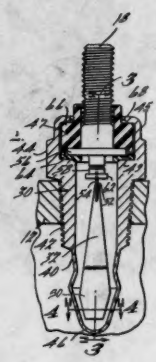


A simplified, low-cost thermostat in which the switch includes a lateral projection engageable with the center of a bimetallic snap disc. The switch retains the disc in position in the body without separate mounting means. The body is symmetrical about a lateral plane so that the switch may be assembled thereon in either of two positions and the switch elements are arranged so that the thermostat can be installed in either of two positions. Means are provided to adjust the switch pressure and operating position after assembly to compensate for variations in tolerances and to eliminate the need of selective assembly.

3,601,742
TEMPERATURE ACTUATED ELECTRICAL SWITCH

Harry I. Baker, Ann Arbor, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Sept. 2, 1969, Ser. No. 854,674
Int. Cl. H01h 37/04, 37/20, 37/52
U.S. Cl. 337—380 1 Claim

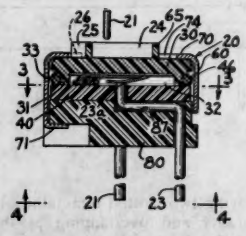


A temperature-actuated electrical switch of minimum size and dimension having a flattened conical tip portion insertable through a minimum sized opening in an engine block or container of fluid of variable temperature and featuring a tapered, reed-type electrical contact element of increased strength and stability and vibration attenuating characteristics.

3,601,743
MINIATURIZED SINGLE TURN POTENTIOMETER WITH HERMETICALLY SEALED ROTOR AND SUBSTRATE

Victor G. Mathison, Solana Beach; Robert M. Hayflick, La Jolla; Bo Gustaf Fahlstrom, San Diego, and Charles W. Yungblut, San Diego, all of, Calif., assignors to Electra/Midland Corporation, Kansas City, Kans.

Filed Oct. 1, 1969, Ser. No. 862,888
Int. Cl. H01c 9/02
U.S. Cl. 338—164 10 Claims

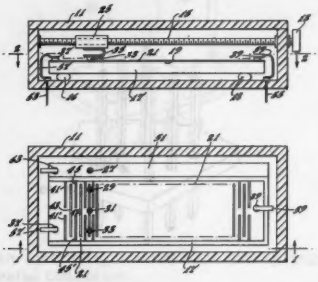


A miniaturized single turn potentiometer having a rotor and substrate and in which the rotor is of recessed configuration having peripheral contact with the substrate and hermetically sealed with respect to the latter, with a contact spring seated in the recess for wiping the resistance element. Means are included for ensuring optimum contact pressure and to facilitate assembly so that proper phasing of the wiper with respect to the lead mounting is assured. Provision is made for substitution of bases for different mounting styles with minimum change in the basic structure.

3,601,744
VARIABLE RESISTOR WITH STRAIN-REDUCING ATTACHMENT MEANS FOR THE SUBSTRATE

Felix Zandman, Philadelphia, Pa., assignor to Vishay Intertechnology Inc., Malvern, Pa.

Filed July 14, 1969, Ser. No. 841,322
Int. Cl. H01c 9/02
U.S. Cl. 338—183 4 Claims

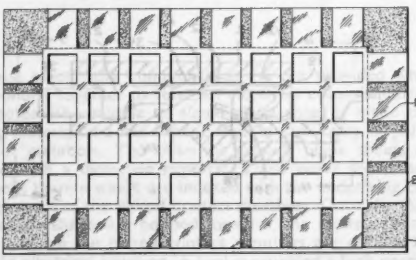


An adjustable resistor wherein a predetermined pattern of thin metallic film is deposited upon a substrate, a thin isolating layer being interposed between the substrate and film, and a movable contact system with suitable linear or rotary mechanical drive means is arranged for movability parallel to the substrate surface on which are fixed the isolating layer and metallic film, the contact system providing connection to the metallic film at a distance from one end thereof dependent on the position of the drive means. The pattern in the metallic film compels the electric current to flow through a path of limited width and of effective length much greater than the straightline length along the midline of the pattern.

3,601,745
STANDARDIZED RESISTOR BLANK

Walter Helgeland, Nashua, N.H., assignor to Sprague Electric Company, North Adams, Mass.

Filed Dec. 24, 1969, Ser. No. 887,839
Int. Cl. H01c 7/00
U.S. Cl. 338—203 4 Claims



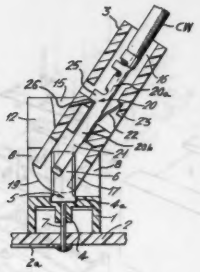
Standardized resistor blanks are machined by an electron beam which can be program controlled to form a variety of different resistor networks from the same standardized resistor blank.

3,601,746
CONNECTOR HOUSING ASSEMBLIES

Wladimiro Teagno, Turin, Italy, assignor to AMP Incorporated, Harrisburg, Pa.

Filed June 5, 1969, Ser. No. 830,732
Claims priority, application Italy, June 15, 1968, 17795A/68
Int. Cl. H01r 39/00
U.S. Cl. 339—4 R 9 Claims

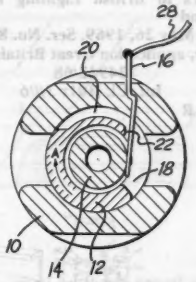
A two-part connector for making multiple connection to a printed circuit panel has one part mounted in trunnions and with fork leaf contacts engaging tabs of the other part so that the two parts may be rotated, relatively, in the manner of a hinge to vary the cable leadout angle. The two parts may be mated or disengaged over a wide range of relative orientation and facilitate connections to spaced boards of a stack or in low access space.



3,601,747
BRUSH BLOCK RETRACTOR AND ALIGNMENT DEVICE

Ralph J. Prall, Wayne, N.J., and Georg Olsen, Staten Island, N.Y., assignors to Singer-General Precision, Inc., Little Falls, N.J.

Filed Sept. 18, 1969, Ser. No. 859,060
Int. Cl. H01r 39/42
U.S. Cl. 339—5 6 Claims



A device for retracting and aligning the brush members of a brush block assembly with respect to a slipring assembly, wherein a cylindrical member provided between the brush lock assembly and the slipring assembly has a plurality of slots for receiving the brush members, and an arcuate groove registering with each slot. The cylindrical member is rotatable with respect to the brush block assembly so that each brush member can be transferred into said groove to uniformly retract the brush members.

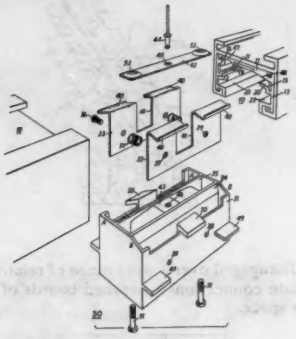
3,601,748
COUPLING MEMBER FOR ELECTRICAL DISTRIBUTION TRACKS

Derek James Hart, and Robert Davis, both of London, England, assignors to British Lighting Industries Limited, London, England

Filed May 26, 1969, Ser. No. 827,707
Claims priority, application Great Britain, July 22, 1968, 34941/68
Int. Cl. H01r 3/06
U.S. Cl. 339—14 R 1 Claim

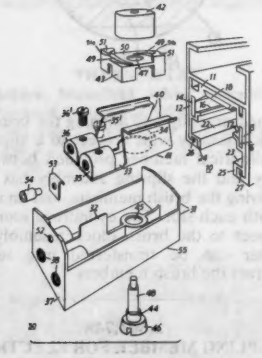
A coupling member, for connecting the ends of two lengths of electricity distribution track in which exposed track conductors are mounted, has a pair of conductive con-

tact members which are resiliently mounted within a housing parallel to and insulated from one another, the coupling member being so constructed as to be capable of insertion



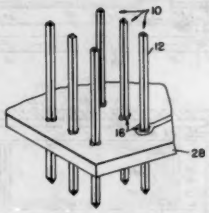
into the adjacent ends of two lengths of track with contact fingers, provided on the contact members, biased into engagement with the track conductors.

3,601,749
INPUT CONNECTOR FOR ELECTRIC DISTRIBUTION TRACKS
Derek James Hart, and Robert Davis, both of London, England, assignors to British Lighting Industries Limited, London, England
Filed May 26, 1969, Ser. No. 827,820
Claims priority, application Great Britain, July 22, 1968, 34942/68
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 R **2 Claims**



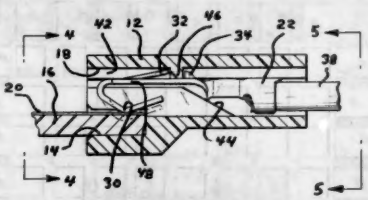
An input connector for connecting a distribution track to an electricity supply has a pair of movable conductor elements provided with terminals for wiring to the supply, the input connector having a cam assembly, for moving the conductor elements into a position in which the conductor elements (i) make contact with exposed track conductors housed in the distribution track and (ii) clamp the input connector to the track.

3,601,750
CIRCUIT BOARD CONNECTOR
Lloyd Mancini, New Cumberland, Pa., assignor to Berg Electronics, Inc., New Cumberland, Pa.
Continuation-in-part of application Ser. No. 749,694, Aug. 2, 1968. This application Feb. 9, 1970, Ser. No. 9,841
Int. Cl. H01r *5/04;* **H05k** *1/00*
U.S. Cl. 339—17 C **16 Claims**



A square pin with a cylindrical ferrule fitted around the medial portion and mechanically secured to the corners of the pin forms a circuit board through connector. A plurality of passages extend the length of the ferrule between the sides of the pin and the interior of the ferrule. The connector is fitted in a hole in a circuit board with the ends of the ferrule extending to either side of the circuit board, following which the ends of the ferrule are deformed to engage the circuit board and secure the connector to the circuit board.

3,601,751
PRINTED CIRCUIT BOARD CONNECTOR
William Vito Pauza, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Sept. 9, 1968, Ser. No. 758,397
Int. Cl. H01r *13/50, 9/08*
U.S. Cl. 339—17 **2 Claims**

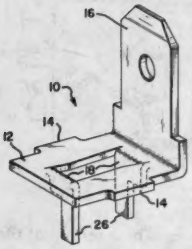


An electrical connector for a printed circuit board or the like comprising an insulating housing and a plurality of electrical contacts disposed in regularly spaced cavities in the housing. An elongated slot communicates with the cavities and receives the printed circuit board. Stabilizing means are provided in the housing cavities and on the contacts for maintaining the contacts in position within the housing.

3,601,752
ELECTRICAL CONTACT
William Vito Pauza, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed July 23, 1969, Ser. No. 844,020
Int. Cl. H01r *9/14*
U.S. Cl. 339—17 R **3 Claims**

A contact is disclosed for electrically connecting conduc-

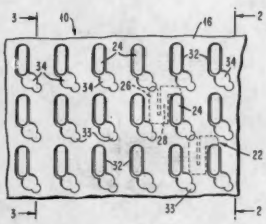
tors to printed circuit boards or the like. More specifically the contact has provision for staking connection to a circuit board and an upstanding terminal for mating engagement with a terminated conductor.



3,601,753
COAXIAL INTERFACE CONNECTOR

Edward C. Uberbacher, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 10, 1970, Ser. No. 45,082
Int. Cl. H01r *29/00*
U.S. Cl. 339—18 C **9 Claims**



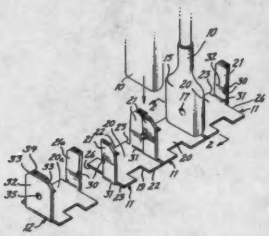
Three electrically conductive sheets are provided which are bonded together to form an electrical coaxial interface connector. The middle or signal plane sheet is made of a spring material and has formed therein a plurality of paired contact members. The outer or ground plane sheets are coated with a dielectric material. These outer sheets have openings therein which are indexed with the underlying contact element of the paired contact members. Once the three conductive sheets are bonded together, the interconnecting pads between the paired contact members are removed to provide electrical isolation. A tool is provided which consists of pins and opposed die surfaces which, when positioned with respect to the connector, provides a means by which the contact elements are bent so that they extend through the openings indexed therewith in the outer conductive sheets.

3,601,754
ADAPTER FOR GANG CONNECTING A PLURALITY OF FEMALE ELECTRICAL TERMINALS

John Richard Filson, Medford, N.J., assignor to Tech Connector Corporation, Westville Grove, N.J.

Filed June 8, 1970, Ser. No. 44,324
Int. Cl. H01r *31/08*
U.S. Cl. 339—19 **7 Claims**

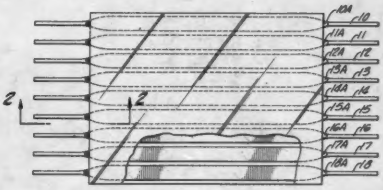
A gang connection adapter wherein a plate part is provided to extend between female terminals to be connected, and connector tabs extending from the plate part for insertion into respective female terminals, wherein at least one such connector tab is less than full width for only partially occupying a female terminal, thereby permitting an identical adapter to have its connector tab inserted into the remainder of the partially occupied female terminal.



3,601,755
ELECTRICAL JUMPER AND METHOD OF MAKING SAME

James F. Shiells, Jr., La Canada, Calif., assignor to Digital Sensors, Inc.

Filed Dec. 10, 1965, Ser. No. 512,965
Int. Cl. H01r *31/08*
U.S. Cl. 339—19 **1 Claim**



In making an electrical jumper a round wire has an intermediate portion flattened by applying a rolling pressure leaving the ends of the wire in original round condition for use as terminals. Such intermediate portion is sandwiched between two sheets of insulating material which are then laminated to cover only such flattened intermediate portion. A plurality of such wires may be so sandwiched between sheets of insulating material with the planes of such flattened portions being coplanar. In the flattening operation the cross-sectional area of the flattened portion is preferably made less than the cross-sectional area of either end of the wire for enhanced flexibility.

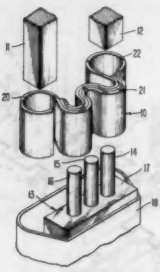
3,601,756
TERMINATOR CONNECTOR FOR MULTICONDUCTOR CABLE

Robert R. Stroh, Coatesville, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Aug. 14, 1969, Ser. No. 850,210
Int. Cl. H01r *31/08*
U.S. Cl. 339—19 **10 Claims**

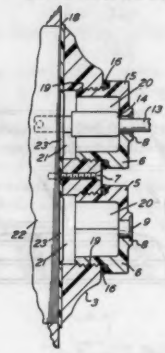
A terminator connector is disclosed for use with a multiconductor cable. The connector is formed of a laminate of two layers of conductive material joined to opposite surfaces of a layer of insulating material and the laminate is provided with various types of undulations so as to be able to be inserted between the various conductors of the cable with each conductive layer being extended for connection to a terminal

lug. The connector of the present disclosure is particular adaptable for employment with multiconductor cables where



alternate conductors are adapted to be shielding conductors which reside at a particular shielding voltage level.

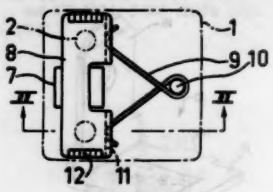
3,601,757
MALE PLUG RETAINER
Glenn D. Gober, 27 President Ave., Rutledge, Pa.
Filed May 1, 1970, Ser. No. 33,605
Int. Cl. H01r 13/44
U.S. Cl. 339—39 9 Claims



A male electrical plug retainer to cover a wall-mounted type electrical box or the faceplate of such a box. The retainer has a plate portion fastened to the box or the faceplate with a screw. The retainer also has a recess adapted to receive and retain a male plug. A hole extends from the recess to permit passage of the line cord. A recess is partially formed by a split threaded hollow cover, provided with locating pins and a hole, and a center closure is provided to close said hole when a line cord does not pass through it.

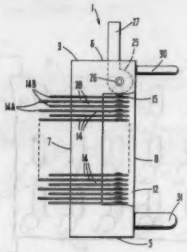
3,601,758
BIPOLAR ELECTRIC SOCKET
Tage Arnold Davidsson, Gothenburg, Sweden, assignor to Joel Olssons Elektriska AB, Stockholm, Sweden
Filed June 9, 1969, Ser. No. 831,490
Claims priority, application Sweden, June 10, 1968, Mar. 31, 1969, 7767/68;4500/69
Int. Cl. H01r 13/44, 13/60
U.S. Cl. 339—40 10 Claims

A bipolar electric socket of the type having, for protectional reasons, a spring-loaded shutter mounted in the space between the entrance holes and the underlying contact sleeves in such a manner that the shutter will be pressed away to uncover the sleeves only when two pins or the like—corresponding to the plug pins—are inserted simultaneously in said holes. One end of the shutter is freely supported by an upwards-sloping surface terminating beyond the holes, and the other end is spring loaded to maintain the shutter pressed against the underside of the holes and in engagement



with a blocking shoulder. The insertion of the two pins of an attachment plug will first release the shutter from the shoulder and then push the shutter down the sloping surface, against the spring action, to uncover the entrance holes and the sleeves.

3,601,759
ELECTRICAL CONNECTOR
Randolph G. Barker, Ranyham, Mass., assignor to Component Manufacturing Service, Inc., West Bridgewater, Mass.
Filed Feb. 7, 1969, Ser. No. 797,553
Int. Cl. H01r 11/02, 13/54
U.S. Cl. 339—59 M 9 Claims

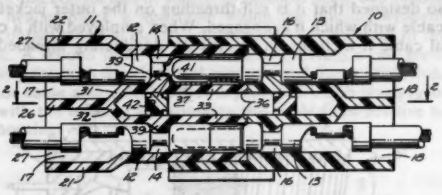


An electrical connector primarily for use in computer circuits having a pair of interengageable terminals. Each terminal has a plurality of aligned parallel-spaced contact elements insulated from each other with the spaces intermediate adjacent contact elements having a width sufficient to receive contact elements of the other terminal in electrical interengagement. Means for exerting a force normal to a parallel alignment of the contact elements are provided to compress the contact elements in the direction of the parallel alignment to effect positive electrical interengagement of the contact elements of one terminal with the contact elements of the other terminal.

3,601,760
ELECTRICAL CONNECTOR
Thomas M. Cairns, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Mar. 17, 1969, Ser. No. 807,733
Int. Cl. H01r 13/54, 9/16
U.S. Cl. 339—59 7 Claims

An electrical connector includes both a terminal having an annular recess therearound intermediate portions of the terminal of larger cross section and a block of nonconductive material having an aperture therein for receiving the terminal. A flexible wall forms a portion of the terminal block and this wall extends along and defines at least a portion of the length of the block's terminal receiving aperture. A locating tab, secured to the flexible wall, enters the annular recess

of the terminal to position it within the receiving aperture. A locking device is attached to the block to prevent the free



flexing of the flexible wall when the tab has positioned the terminal within the aperture.

3,601,761

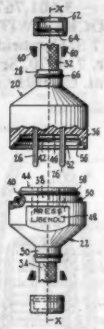
WATERPROOF LOCKING-TYPE ELECTRIC PLUG AND RECEPTACLE COUPLING

Arthur M. Harris, 135 Southwood Road, Fairfield, Conn.

Filed Aug. 28, 1969, Ser. No. 853,898

Int. Cl. H01r *13/08*

U.S. Cl. 339—61 R **9 Claims**



Electric coupling comprising plug and receptacle parts having contact pins and cooperable contactor sockets carried respectively by plug and receptacle bodies of insulating material. The bodies include portions which have a telescoping fit and which have, on contacting or mating cylindrical inner and outer surfaces, a cooperable annular detent bead and detent groove by which the bodies are releasably held assembled. At such cylindrical surfaces a sealing O-ring is provided on one body and a sharp sealing shoulder on the other body, adapted to bite into the O-ring to effect a watertight seal. The biting engagement is characterized by axial force as distinguished from radial force. The contactor sockets are of a greater width than the contact prongs whereby the latter can move edgewise in the sockets, enabling the plug and receptacle bodies to be separated by employing a relative angular movement which forces the detent bead out of the cooperable annular detent groove. A flattened configuration on one body, with or without imprinted words, indicates the direction of angular separating force which is required to separate the bodies. A plurality of arcuate sealing wedges are forced around the electric cords at the inside of the collars of the bodies, said wedges being held in place by snap caps to effect a securement of the electric cords as well as to seal the same where they enter the bodies.

3,601,762

ELECTRICAL CONNECTOR

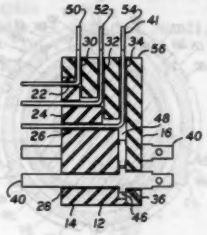
Walter Eshelman, Laconia, N.H., assignor to Vernitron Corporation, New York, N.Y.

Filed Aug. 15, 1969, Ser. No. 850,405

Int. Cl. H01r *13/62*

U.S. Cl. 339—64 M **4 Claims**

An electrical connector assembly for straight through connection and connection to a printed circuit board including mating connector body halves and a plurality of metallic contact elements adapted to be assembled in the connector



halves. Configuration of connector halves and contact elements will position the latter in the connector without need for locking and positioning devices.

3,601,763

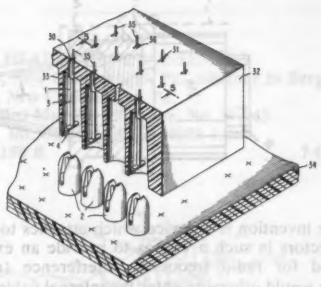
PIN-SOCKET CONNECTION DEVICES WITH TORSIONED PIN CONTACTS

Robert D. McNutt, Poughkeepsie, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Feb. 28, 1969, Ser. No. 803,162

Int. Cl. H01r *13/62*

U.S. Cl. 339—65 **5 Claims**



In this plug-in electrical connection arrangement contact pressure is established by twisting the torsionally resilient pin member of each pin-socket contact couple. The insulating base which holds and provides protective enclosures for the pin contacts also provides alignment guidance for the socket contacts. The pin contact has a torsionally resilient stem section, ideally colinear with the longitudinal axis of the socket contact, which terminates in a transversely extended contact cap section. In the process of making contact the cap is forced to rotate and torsionally flex the stem. The reaction of the stem establishes contact pressure at the lateral extremities of the cap.

3,601,764

LOCK DEVICE FOR COUPLING MEANS

John K. Cameron, Hillside, Ill., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

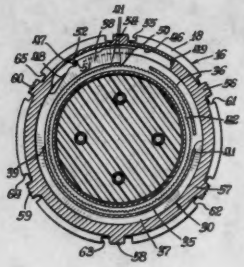
Filed Jan. 28, 1969, Ser. No. 794,547

Int. Cl. H01r *13/54*

U.S. Cl. 339—89 M **3 Claims**

Lock device for an electrical connector or the like including a coupling ring mounted on one shell and threaded onto another shell to hold the shells together. A rotatable lockring is provided for actuating lock means to prevent rotation of the coupling ring relative to the one shell. The lock means preferably includes an arcuate cantilever member having a cam surface engaged by a pin on the lockring to engage tooth

means on the member with the one shell. The lockring is rotated in the direction of the coupling ring rotation and



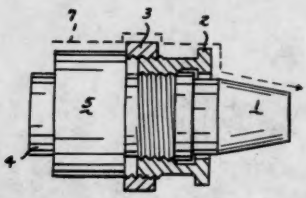
visual, audible and feel indicators shown when the lockring is in its locking position.

3,601,765

CONNECTOR COUPLING RING GAP CLOSURE DEVICE

John S. Miller, Long Beach, Calif., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Dec. 4, 1969, Ser. No. 882,180
Int. Cl. H01r *13/54*
U.S. Cl. 339—89 C **1 Claim**



The invention is a device which attaches to circular cable connectors in such a way as to provide an external path to ground for radio frequency interference (r.f.i.) currents which would otherwise enter the internal cable wires. It comprises a backshell with two threaded rings of r.f.i. conducting material. One ring which is called the backshell retaining ring and which is threaded on the inside and outside engages the backshell and is then screwed onto the threaded cable connector thereby connecting the backshell and cable connector. The other ring is attached by threads to the outside of the first ring and, after the backshell and cable connector have been joined, is rotated toward the cable connector until it makes firm contact with the cable connector's coupling ring which has already been tightened into position. Once the connection is made between the coupling ring and the outer ring of the device the r.f.i. currents follow the path from the coupling ring to the outer ring of the device, to the backshell retaining ring, to the backshell, and on to ground.

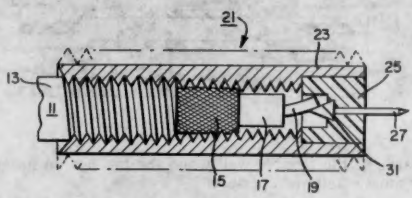
3,601,766

CONNECTOR DEVICE FOR SUPPORTING CABLES AND FOR ADDITIONALLY PROVIDING AN ELECTRICAL CONNECTION

Vernon F. Alibert, Ivy Lane, Chester Heights, Pa.

Filed Feb. 13, 1969, Ser. No. 798,948
Int. Cl. H01r *9/08, 17/04*
U.S. Cl. 339—97 **1 Claim**

The present connector device provides a somewhat elongated element having an internally threaded surface and having at least one end thereof chamfered. The connector device can be further formed, or may include means, to be secured to a fixed member. In one embodiment, the elongated element has located in the end opposite from the chamfered end an insert of electrically insulating material, and in the center of this insert is disposed an electrically conducting member. The elongated member in combination with its end piece is so designed that it is self-threading on the outer jacket of a cable with which it is engaged. When employed with a coaxial cable it includes an electrically conducting threaded sur-



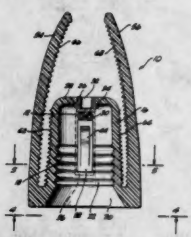
face and is designed to come in electrical contact with the inner shield of the coaxial cable. In addition, in this last mentioned embodiment the present device makes further electrical contact between the center conductor of the coaxial cable and the centrally disposed conducting member of the end piece.

3,601,767

BULB SOCKET WITH HANGER

William J. Eckles, 1117 S. Cambridge St., Anaheim, Calif.

Filed Apr. 7, 1970, Ser. No. 26,192
Int. Cl. H01r *11/20*
U.S. Cl. 339—99 L **11 Claims**



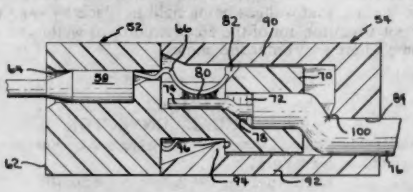
The bulb socket is unitarily formed with first and second fingers joined to the socket at the front thereof, and extending rearward past the socket to face each other. The fingers are resilient to resiliently clamp a small structure on which the bulb socket is to be hung between one of the fingers and the socket body or to clamp a larger structure from which the bulb socket is to be hung between the two fingers behind the socket body.

3,601,768

CONNECTOR FOR MULTIPLE CONDUCTOR CABLE

Linn Stephen Lightner, Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of application Ser. No. 763,707, Sept. 30, 1968. This application Jan. 21, 1969, Ser. No. 792,493
Int. Cl. H01r *13/58*
U.S. Cl. 339—103 M **6 Claims**



An electrical connector for multiple conductor electrical cable having a housing containing a plurality of contact means having contact tabs extending therefrom. A header

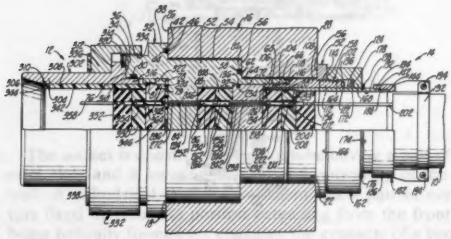
block is adapted to receive the multiple conductor cable to orient the conductors in staggered relation along two planes. The header block is insertable within the housing whereby the contact tabs will electrically engage the conductors of the cable. A second form of the invention provides a one piece housing for both the electrical contacts and the multiple conductor cable and a strain relief is provided which is engageable with the housing for retaining the cable fixed relative to the housing.

3,601,769

UNDERWATER ELECTRICAL CONNECTOR

Leland W. Oliver, and Robert A. Patterson, both of Phoenix, assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed June 27, 1969, Ser. No. 837,123
Int. Cl. H01r *7/02, 13/54*
U.S. Cl. 339—103 M **2 Claims**



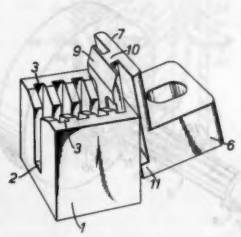
An underwater electrical connector for providing cable strain relief in order to eliminate the possibility of wire breakage at the terminal area. Redundant safety is provided by means of a primary header and a secondary header, each of which has glass sealed contacts mounted therein. Moreover, a cable strain relief is formed by means of a wave washer on the terminal assembly. When the cable flexes, the wave washer is compressed, allowing axial movement of the entire assembly surrounded by a sleeve and relieving the strain on individual terminal joints formed between the wires of the cable and socket contacts of the connector. The device could be used where the cable is subjected to vibration and oscillation due to movement, resulting in substantial possibility of wire breakage at the terminal area.

3,601,770

EDGE CONNECTOR FOR PRINTED CIRCUIT PANELS

Thomas William Bowley, Bramcote, England, assignor to United-Carr Incorporated, Boston, Mass.

Filed July 17, 1969, Ser. No. 842,485
Int. Cl. H01r *13/50;* **H02b** *1/02*
U.S. Cl. 339—125 R **1 Claim**



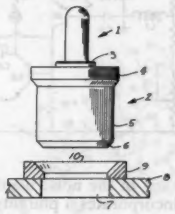
A detachable endpiece for an edge connector comprises a base attachable to a support, the base having an arm carrying a resilient platelike element for sliding engagement into an edge recess in the connector and a lip for snapping under the underface of the connector.

3,601,771

ELECTRICAL COMPONENTS WITH CHAMFERED MOUNTING RINGS

Hilliard Dozier, Cincinnati, Ohio, assignor to U.S. Terminals, Inc., Cincinnati, Ohio

Filed Mar. 23, 1970, Ser. No. 21,797
Int. Cl. H02b *1/02*
U.S. Cl. 339—126 RS **7 Claims**



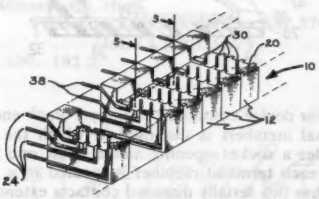
Electrical components, such as insulated terminals, transistor sockets and the like, having a distortable dielectric body adapted to be press-fitted in an unchamfered opening in a chassis or other support, the distortable body having a diameter greater than the opening into which it is to be inserted and provided with a chamfered mounting ring of a size to seat against the chassis in an area surrounding the opening, the chamfered mounting ring acting to define a chamfer for the opening so that the distortable body may be readily inserted therein.

3,601,772

HEADER BLOCK ASSEMBLY

Lloyd Mancini, New Cumberland, Pa., assignor to Berg Electronics, Inc., New Cumberland, Pa.

Filed May 20, 1970, Ser. No. 39,043
Int. Cl. H01r *9/22;* **H05k** *1/04*
U.S. Cl. 339—156 R **7 Claims**



A header block assembly for interconnecting circuit elements formed of a number of insulating wafers secured together with contact wires extending between sides of the assembly along the interfaces between wafers. The wires are fitted in grooves formed in one wafer below the interface. Ridges formed in the adjacent wafer extend into the grooves to form a tight interference fit which prevents reduction of cross resistance between wires due to seepage of fluids into the interface between wafers.

3,601,773

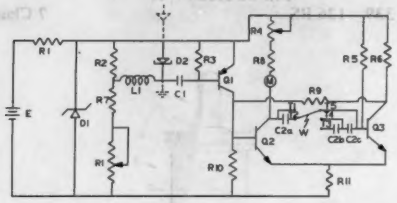
WIRELESS R. F. RADIATION TACHOMETER

Edward Frieling, Livingston, N.J., and William G. Konos, Salem, Mass., assignors to Hartman Marine Incorporated, Newark, N.J.

Filed June 16, 1969, Ser. No. 833,257
Int. Cl. G01p *3/48*
U.S. Cl. 324—170 **16 Claims**

A tachometer which does not require any wired connections or inductive probes. It picks up radiation from ignition spark discharges and the like, and uses these to trigger a tunnel diode which activates a pulse-stretching monostable multivibrator. An ammeter is in series with the output current of the multivibrator, and is calibrated in r.p.m. The nonretrig-

gerable period enhances the accuracy of the tachometer by providing noise blanking. A switching circuit adjusts the electrical value of a coupling network between stages of the multivibrator and adjusts the period thereof to accommodate two, three, four or six cylinder internal combustion engines



without sacrificing any of the noise blanking capability. The coupling network incorporates a plurality of matched timing capacitors, enabling the tachometer to be calibrated for any number of engine cylinders by means of a single potentiometer.

3,601,774

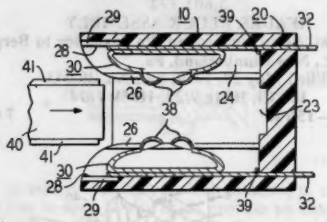
CONNECTOR DEVICE HAVING SERIALLY DISPOSED PRETENSIONED CONTACTS

Theodore Stathos, Jamaica, N.Y., and Norman Wasserman, Columbus, Ohio, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 6, 1968, Ser. No. 781,830

Int. Cl. H05k *1/12*; H01r *9/12*

U.S. Cl. 339—176 MP **4 Claims**



A connector device containing a support block and one or more terminal members is disclosed in which the support block includes a socket opening and at least one terminal pocket and each terminal member is located in a terminal pocket and has two serially disposed contacts extending into the socket opening.

3,601,775

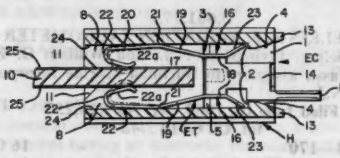
PRINTED CIRCUIT CONNECTOR

Bruce Cameron Longenecker, Harrisburg, and Lex Donald Kensinger, Middletown, both of, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 4, 1969, Ser. No. 796,361

Int. Cl. H05r *1/07*; H01r *11/22*

U.S. Cl. 339—176 **6 Claims**



A printed circuit connector comprises a dielectric housing having an electrical terminal disposed in a passageway thereof. The terminal includes a cantilevered contact arm extending along a passageway wall, the contact arm having a bight in engagement with the wall to provide a point about which an outer section of the contact arm is movable outwardly toward the passageway wall when a hook-shaped conductor-engaging section of the outer section engages a conductive path on a printed circuit board when it is moved within a board-receiving area in the housing.

3,601,776

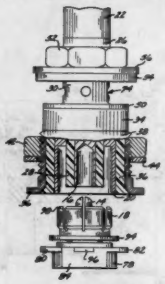
ELECTRICAL CONNECTORS

Gerald A. Curl, Orange, Calif., assignor to Symbolic Displays, Inc., Orange, Calif.

Filed May 20, 1969, Ser. No. 826,139

Int. Cl. H01r *17/04, 13/12*

U.S. Cl. 339—177 **11 Claims**



This invention relates to improvements in electrical connectors. A two circuit jack and plug are described in which the jack is formed of a series of sleeves inserted one within the other to expose, at one end of the jack, a pair of contacting rings. The contacting rings are noncircular in that their sidewalls are flat at spaced points around their periphery. They are held in encompassing ring retainers having inner dimensions to squeeze the contacting rings such that they are more nearly circular. The jack is associated with a phonograph type plug whose outer contact is arranged to have its outer surface, rather then its inner surface, mate with a respectively associated one of the contacting rings of the jack.

3,601,777

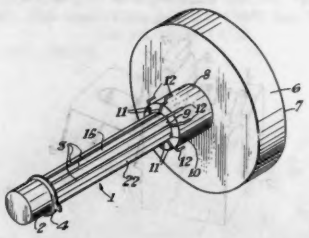
LEAD SEPARATOR FOR MICROMINIATURE DEVICES

Roscoe A. Norton, Jr., and William M. Carrozza, both of Batesburg, S.C., assignors to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Feb. 4, 1969, Ser. No. 796,476

Int. Cl. H01r *13/50, 13/64*

U.S. Cl. 339—186 M **11 Claims**



This disclosure relates to a microminiature component lead separator which includes an elongated cylindrical electrical insulative body. The insulative body is provided with a suitable indexing means and a plurality of circularly spaced semienclosed grooves extending along substantially the entire

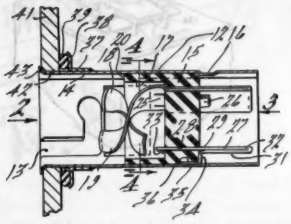
length of the elongated body for receiving the conductive leads of the microminiature component.

3,601,778

LAMP SOCKET

Ronald G. Hollett, Rochester, Mich., assignor to Microdot, Inc., New York, N.Y.

Filed Feb. 3, 1969, Ser. No. 796,058
Int. Cl. H01r 33/48
U.S. Cl. 339—188 10 Claims



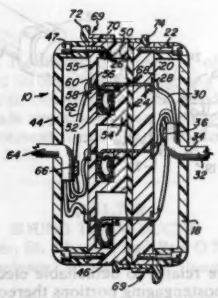
The socket is constructed from a tube having a pair of bayonet slots and a locating slot formed outwardly of the tube wall. A cylindrical insulating element has a pair of conductors fixed thereto, the portion extending from the front face being helically formed for engaging the contacts of a two filament light bulb and the portion extending from the rear face forming terminals. A ground terminal is also supported by the insulating element having a portion in contact with the wall of the tube with the terminal end spaced a greater distance from the center of the element for locating the contacts of a plug insertable in the rear end of the tube for properly connecting the three terminals to a circuit.

3,601,779

INTERLOCKING ELECTRICAL CONNECTOR

Edmund M. Waller, Sr., 3228 Sleepy Hollow Road, Falls Church, Va.

Filed Jan. 27, 1969, Ser. No. 794,166
Int. Cl. H01r 13/06, 13/54
U.S. Cl. 339—192 4 Claims



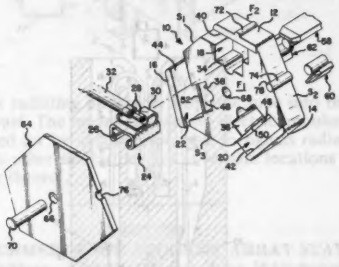
Male and female electrical connectors, each having contacts bent medially to provide one portion overlying another portion. The female connector includes an offset stepped socket which permits contact engagement within the socket thereby preventing separation of the connectors under the influence of outwardly pulling forces.

3,601,780

THREE-POINT CONTACT ELECTRICAL CONNECTOR ASSEMBLY

Armand Rene De Lyon, Harrisburg, and Edwin Stanton De Bolt, Carlisle, both of, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 9, 1970, Ser. No. 27,041
Int. Cl. H01r 33/72
U.S. Cl. 339—192 4 Claims



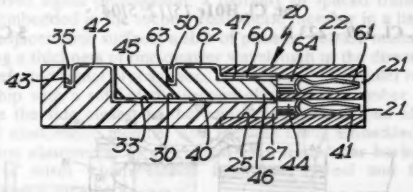
Disclosed is an electrical connector assembly having three receptacle connectors located therein for mating contact with a three-terminal male connector hermetically mounted in a motor housing or the like. One of the receptacle connectors is retained in the triangular-shaped housing in a reversed position relative to the other two receptacle connectors so that the wire conductor connected thereto exits the housing toward the other two wire conductors to form a Y-configuration.

3,601,781

MINIATURE CONNECTOR AND METHOD OF MAKING

Doyle D. Mullin, Minneapolis, Minn., assignor to Omnetics, Inc., Minneapolis, Minn.

Filed Aug. 22, 1969, Ser. No. 852,370
Int. Cl. H01r 33/76
U.S. Cl. 339—192 R 16 Claims



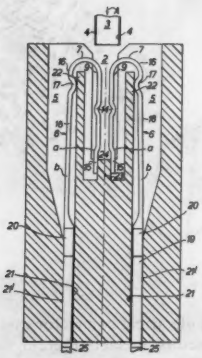
An electrical connector generally formed in miniature size for use with a mating plug having a plurality of closely adjacent extending terminals is formed from a rectangular insulated body having a cavity forming an end cap with a plurality of parallel bores disposed in multiple rows and extending longitudinally through the end face of the end cap into which is inserted at least a pair of insulation body members having a plurality of grooves formed in each communicating with the bores in the end cap. A plurality of pin terminals are secured within the bores and grooves, the rear terminals are secured within the bores and grooves, the rear portions of each having a pad formed thereon to which a conductor may be connected, and the forward portions being recessed within the bores. The plurality of bodies are bonded together to form an integral unit.

3,601,782

PRINTED CIRCUIT EDGE CONNECTOR

Hermanus Petrus Johannes Gillissen, Vlijmen, and Lucas Gerardus Christinus Teurlings, 's-Hertogenbosch, both of, Netherlands, assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 4, 1968, Ser. No. 780,956
Claims priority, application Netherlands, Sept. 30, 1968, 6716581
Int. Cl. H01r *13/50*
U.S. Cl. 339—217 3 Claims



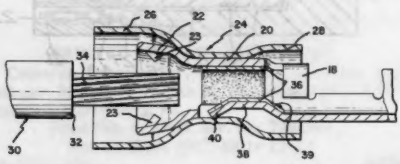
A printed circuit edge connector comprises contact springs having contact surfaces substantially parallel to the direction of insertion of a printed circuit board, each contact spring being loaded between three laterally spaced surfaces along a contact-receiving cavity of a housing so that the contact pressure is substantially constant over the whole area of the contact surfaces so that excessive wear against specific regions of the contact surfaces containing precious metal plating is thereby avoided.

3,601,783

ELECTRICAL CONNECTOR WITH SPRING BIASED SOLDER INTERFACE

Winfield Warren Loose, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 5, 1969, Ser. No. 804,538
Int. Cl. H01r *15/12, 5/04*
U.S. Cl. 339—223 R 5 Claims



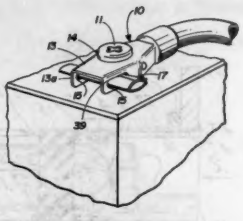
An electrical connector-terminal device is disclosed which features a conductor lead receiving barrel lined with solder and containing spring means adapted to be loaded by lead insertion to force the lead into engagement with the solder prior to and during solder reflow as effected by heat applied to the device. The barrel includes a stop and projections which operate in conjunction with the spring means to mechanically stabilize the lead during solder reflow. A heat shrinkable sleeve is applied over the region of joint between the lead and the device to prevent solder escape and to seal the joint relative to the insulating sheath of the lead terminated thereby.

3,601,784

BATTERY TERMINAL

Francis N. La Martine, 2113 Rosebud Drive, Irving, Tex.

Filed June 16, 1969, Ser. No. 833,649
Int. Cl. H01r *11/12*
U.S. Cl. 339—240 20 Claims



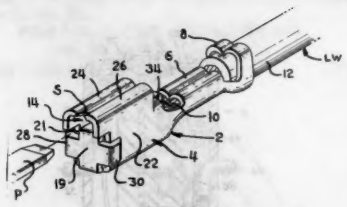
A quick connect-disconnect battery terminal which incorporates a saddle portion for receiving a battery post in cooperation with a movable spring wedge which is retained in guiding members in a spring biased relationship and movable transversely of the post opening with its edge inclined to the direction of the transverse movement for wedging action against the battery post. The wedge is formed of a sheet of resilient material folded into a wedge-shaped spring member to form a pair of spaced sides carrying opposed retaining edges which move in contact with the battery post.

3,601,785

DETACHABLE ELECTRICAL CONNECTORS

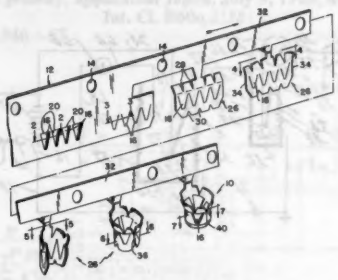
Bruce Cameron Longenecker, Harrisburg, and Stanley Byron Brinser, Steelton, both of, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 4, 1968, Ser. No. 783,162
Int. Cl. H01r *13/20*
U.S. Cl. 339—256 7 Claims



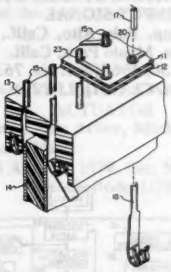
This disclosure relates to detachable electrical connectors having contact postengaging portions thereon and conductor-receiving barrels coextensive therewith. The postengaging portions are disposed on a plane adjacent the plane of the wire barrels. The connectors are secured to lead wires whereafter one or more connectors may be insertably secured to a contact post from an associated component. Connections between the connectors and the post may be made and broken without the aid of application tooling. The connectors are rigid so as to be mechanically and electrically reliable over a long period of continued use.

3,601,786
WIRE GRIP TERMINAL
Weldon L. Brubaker, Mechanicsburg, Pa., assignor to Berg Electronics, Inc., New Cumberland, Pa.
Filed Aug. 18, 1969, Ser. No. 851,030
Int. Cl. H01r 13/12
U.S. Cl. 339—258 R 3 Claims



A wire grip circuit board eyelet with wire-engaging burrs on the edges of the wire grip fingers and the method of making the same.

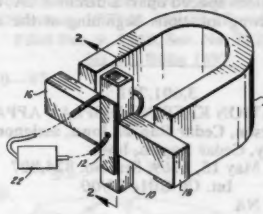
3,601,787
SOLDER TERMINAL AND SPRING-WIRE SOLDER FORM
William A. Reimer, Wheaton, Ill., assignor to GTE Automatic Electric Laboratories Incorporated
Filed June 22, 1970, Ser. No. 48,061
Int. Cl. H01r 5/04
U.S. Cl. 339—275 R 3 Claims



A solder form facilitates replacement of receptacle terminals that extend through blind connecting through-holes of a plurality of circuit boards. A hairpin conductor within the solder form spreads apart when the form is melted to carry solder to a replacement terminal and to the conductive surface of a through-hole.

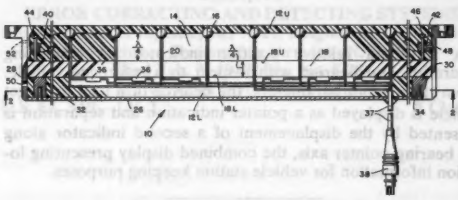
3,601,788
SOUND TRANSDUCER
Bernard J. Straiser, St. Charles, and Rue O'Neill, Jr., Ladue, both of, Mo., assignors to McDonnell Douglas Corporation, ST. Louis, Mo.
Continuation of application Ser. No. 551,298, May 19, 1966. This application May 31, 1968, Ser. No. 739,921
Int. Cl. H04r 23/00
U.S. Cl. 340—8 R 12 Claims

A sound transducer for sending and/or receiving communications through a liquid medium such as through salt water embodied in an open ended tube which fills with the liquid when submerged therein so that the liquid in the tube remains a part of the liquid in which the tube is submerged, means for establishing a magnetic field in a first direction through the liquid in the tube, and means causing electric impulses to pass through the liquid in the tube at an angle relative to the magnetic field to produce pressure changes and corresponding noise signals in the liquid in the tube, said



noise signals radiating outwardly from the tube into the surrounding liquid. The means for causing electric impulses may be substituted for by means responsive to signals radiated in the liquid by other similar devices at remote locations to act as a receiver thereof.

3,601,789
DEEP-SUBMERGENCE ACOUSTIC ARRAY STAVE
Shelby F. Sullivan, Arcadia; Harper John Whitehouse, Hacienda Heights, Calif., and Guy J. Andrews, Stoneham, Mass., assignors to The United States of America as represented by the Secretary of the Navy
Filed Oct. 8, 1969, Ser. No. 864,780
Int. Cl. H04b 13/02
U.S. Cl. 340—9 6 Claims



A transducer assembly for deep submergence, acoustic, signal reception at a band of frequencies, including: a first elongated elastomeric member, generally in the shape of a stave; a second elongated elastomeric member having a thickness of one-quarter wavelength in the direction of preferred signal propagation; a plurality of spaced transducers embedded in the second elastomeric member in a linear row adjacent one surface; a slab of pressure release material, having a thickness of one-quarter wavelength in the direction of preferred signal propagation, and engaged in parallel relationship with a side of the second elastomeric member opposite the side closest to the transducers; the second elongated elastomeric member and the slab being embedded in the first elastomeric member; and each transducer having a pair of wires which extend from the second and first elastomeric members.

3,601,790
COMMON DEPTH POINT SEISMIC PROSPECTING
John H. Sasseen, Houston, Tex., assignor to Esso Production Research Company
Filed Sept. 3, 1969, Ser. No. 855,008
Int. Cl. G01v 1/16
U.S. Cl. 340—15.5 CP 2 Claims

Common depth point seismic prospecting is accomplished by sequentially producing seismic waves at transmitting loca-

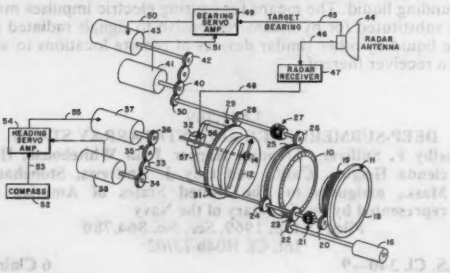
tions spaced apart the distance A, and detecting resulting seismic waves at a first plurality of detecting locations along the traverse spaced apart a distance A from the transmitting location corresponding thereto and a second plurality of transmitting locations spaced apart a distance 2A, the second plurality of detecting locations beginning at the end of the first plurality.

3,601,791

VEHICLE STATION KEEPING DISPLAY APPARATUS

Kenneth C. Emerson, Cedar Rapids, Iowa, assignor to Collins Radio Company, Cedar Rapids, Iowa

Filed May 15, 1969, Ser. No. 824,807
Int. Cl. G01c *23/00*
U.S. Cl. 340—27 NA **7 Claims**



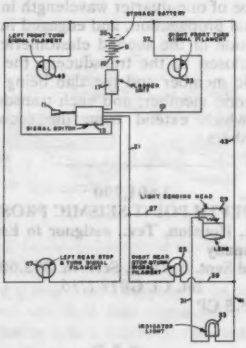
A rho-theta relative position indicator for displaying separation and bearing with respect to a reference vehicle. From radar input parameters, the bearing of a lead or target vehicle is displayed as a pointer indication and separation is presented by the displacement of a second indicator along the bearing pointer axis, the combined display presenting location information for vehicle station keeping purposes.

3,601,792

VEHICLE PASSING DEVICE

John Murray, 1022 Central Avenue, Albany, N.Y.

Filed July 29, 1969, Ser. No. 845,680
Int. Cl. B60q *1/38*
U.S. Cl. 340—34 **2 Claims**



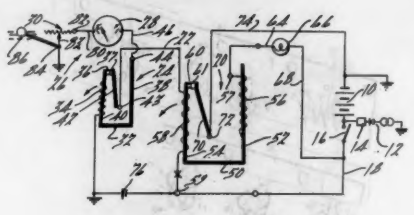
A light-sensing head and indicator light in combination with a passing vehicle's conventional, directional signal system for use during nighttime driving to indicate when the passing vehicle can safely return to the driving lane in which the passed vehicle is proceeding.

3,601,793

LOW FUEL LEVEL WARNING AND GAUGING SYSTEM

Anthony K. Otto, Ann Arbor, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed June 2, 1969, Ser. No. 829,635
Int. Cl. B60q *1/00*
U.S. Cl. 340—59 **11 Claims**



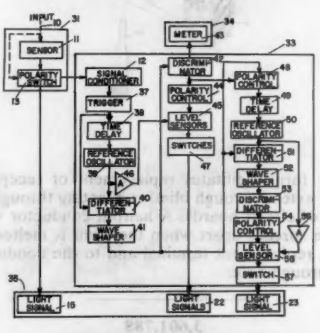
A low fuel level signalling arrangement for a vehicle fuel level gauging system of the constant voltage regulated type. A current responsive relay element is connected between the vehicle battery and the input to the instrument regulator, the regulated output voltage of which is applied to the series combination of a conventional electrothermal fuel gauge and its control unit connected in a single line, ground-returned electrical circuit. The relay operates a switching circuit controlling the energization of a signal lamp which the fuel level diminishes to a predetermined level and includes a biasing or lock-in means for maintaining the switching circuit in operated condition to prevent flickering of the signal lamp.

3,601,794

VEHICLE ACCELERATION AND DECELERATION SENSING AND INDICATING SYSTEM UTILIZING AN AC INPUT SIGNAL

Robert W. Blomenkamp, Palo Alto, Calif., and Enrique J. Klein, 947 Alice Lane, Menlo Park, Calif.

Filed Sept. 30, 1968, Ser. No. 763,673
Int. Cl. G01p *15/12*
U.S. Cl. 340—62 **9 Claims**



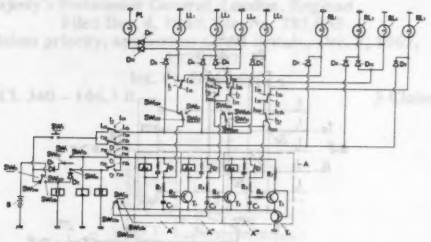
Apparatus for the determination of acceleration, deceleration and reduction in acceleration of a vehicle in which an electromechanical sensing device generates an AC signal having a frequency which varies in accordance with the angular velocity of a shaft turning at a fixed ratio to the vehicle drive shaft. Electronic circuitry processes the signal of the sensing device for continuously monitoring of acceleration and deceleration on a meter, and for operating light signals indicating levels of acceleration, deceleration and reduction in acceleration in a system that is integrated with conventional vehicle light signals.

3,601,795

ELECTRIC CIRCUIT ENERGIZING LAMPS OF A VEHICLE

Tetsuji Shimizu, Nagoya; Shozo Naito, Ama-gun, and Hiroshi Tanaka, Motosu-gun, all of, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Oaza-shimoodia, Nishibiwajimacho, Nishikasugar-gun, Aichi Prefecture, Japan

Filed July 2, 1969, Ser. No. 838,521
Claims priority, application Japan, July 9, 1968, 43-47735
Int. Cl. B60q 1/38
U.S. Cl. 340—67 2 Claims



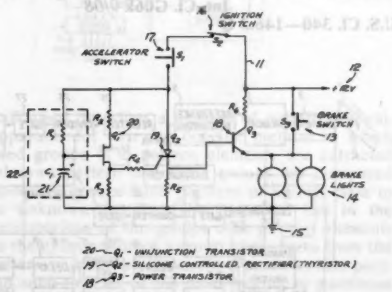
This circuit controls two groups of lamps at the rear of a vehicle adjacent the right and left sides thereof, respectively, and two directional lamps on the front of the vehicle adjacent opposite sides thereof. It includes the usual brake-operated switch for simultaneously illuminating all of the lamps on the rear of the vehicle, two manually operable directional signals for selectively energizing one of the two rear groups of lamps for successive and cyclical energization concurrently with the intermittent energization of the corresponding front directional lamp, and a plurality of hazard switches for causing selective lamps at the front and rear of the vehicle to be energized intermittently, and independently of the operation of the brake and directional switches.

3,601,796

ACCELERATOR RELEASE SIGNAL LIGHT DELAY ACTUATOR

Rudolf G. Mortimer, Ann Arbor, Mich., assignor to John D. Campbell, Livonia, Mich.

Filed Apr. 13, 1970, Ser. No. 27,670
Int. Cl. B60q 1/26
U.S. Cl. 340—71 7 Claims



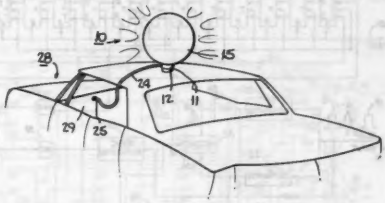
An accelerator release signal light delay actuator in a vehicle electric circuit to actuate signal lamps on the vehicle after a time interval of 4 to 8 seconds whenever the accelerator is continuously in an engine idle position and the ignition switch is closed. The lamp is operated at less than normal available voltage but will operate at normal available voltage when the vehicle brake is applied. The signal lamp remains lighted until the accelerator pedal is depressed or the ignition switch is opened.

3,601,797

ILLUMINATED DISTRESS SIGNAL DEVICE

Robert H. O'Connor, 1777 E. 48th St., Brooklyn, N.Y.

Filed Dec. 9, 1968, Ser. No. 782,324
Int. Cl. B60q 1/00
U.S. Cl. 340—87 9 Claims



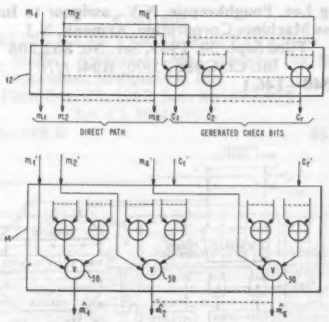
A balloon is mounted on a base through which the balloon can be inflated orally. In addition, a light is mounted within the base which can be plugged into a dashboard outlet of an automobile or to a battery of an automobile, boat or disabled aircraft in order to illuminate the balloon from within. The balloon can be deflated through a manually applied mechanism, such as a pin.

3,601,798

ERROR CORRECTING AND DETECTING SYSTEMS

Mu-yue Hsiao, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 3, 1970, Ser. No. 8,251
Int. Cl. G06f 11/08; G08c 25/00
U.S. Cl. 340—146.1 8 Claims



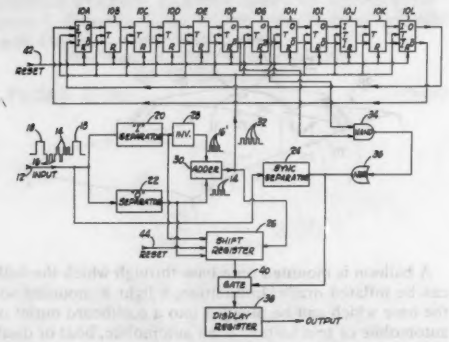
A single error correcting system for correcting messages of any number of data bits comprises encoding means and decoding means. The encoding means adds r check bits, each check bit representative of at most $r-1$ data bits and, on the average, each check bit representative of $>r/2$ data bits; each check bit is representative of no more than one common data bit; and each data bit is represented by exactly two check bits. The decoding means for each data bit has an error correcting circuit receiving three inputs from input circuitry, one input being the data bit itself and the other two inputs being combinations, respectively, of one of the two check bits and other data bits representative of the received data bit. The error correcting circuit is capable of producing an output correctly corresponding to the data bit if no more than one input thereto was in error. A double error detecting system, useful with this single error correcting system, inputs syndrome bits representative of each check bit and of an added parity bit to an OR circuit and to an ADDER circuit, and compares the output from these circuits.

3,601,799

DIGITAL RECORDING-PLAYBACK TECHNIQUE

Ronald J. Martone, Cheshire; Peter G. Mueller, Guilford, and Homer M. Bailey, North Haven, all of, Conn., assignors to Picker Corporation, White Plains, N.Y.

Filed June 26, 1969, Ser. No. 836,915
Int. Cl. G06f 11/00; G11c 29/00
U.S. Cl. 340—146.1 8 Claims



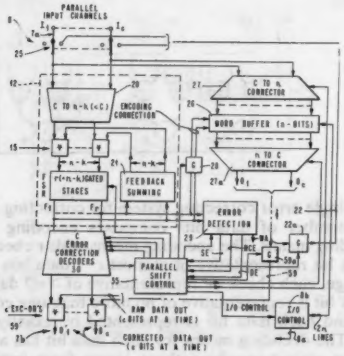
In a digital recording-playback technique, a ring counter is utilized in playback mode to insure that bits have not been dropped or spurious noise signals recorded. If the correct number of signals have been recorded in a word preceding a synchronizing signal, signals are obtained from two adjacent stages of the ring counter that permit the synchronizing signal to open a transfer gate from a shift register to a display register. If the correct number of signals has not been received, transfer is inhibited.

3,601,800

ERROR CORRECTING CODE DEVICE FOR PARALLEL-SERIAL TRANSMISSIONS

Hua-Tung Lee, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.J.

Filed Sept. 30, 1969, Ser. No. 862,206
Int. Cl. G08c 25/00; H04l 1/10
U.S. Cl. 340—146.1 13 Claims



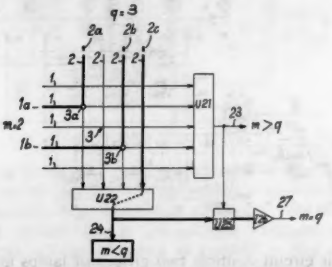
Data signals are encoded in an (n,k) cyclic code and checked for errors and corrected. The encoding and correction decoding apparatus includes an $n-k$ stage parallel input parallel feedback shift register adapted to process the data digit signals in groups of c digits where the number c is greater than $n-k$. An example of implementation is disclosed for the specific case: n=72, k=64, and c=18, illustrating that encoding and/or error check decoding are completed in only 4 (=n/c) parallel shifts and that error correction decoding is accomplished in a maximum of only 3 additional parallel shifts timed to coincide with the handling of the data signals.

3,601,801

PARALLEL SIGNAL LOGIC COMPARISON CIRCUIT

Jacques Louis Sauvan, Paris, France, assignor to Societe Anonyme dite: Societe Nationale D'Etude Dt de Construction de Moteurs D'Aviation S.N.E.C.M.A., Paris, France

Filed Jan. 8, 1969, Ser. No. 789,709
Claims priority, application France, Jan. 9, 1968, 135 311
Int. Cl. G06f 7/00, 7/02
U.S. Cl. 340—146.2 8 Claims



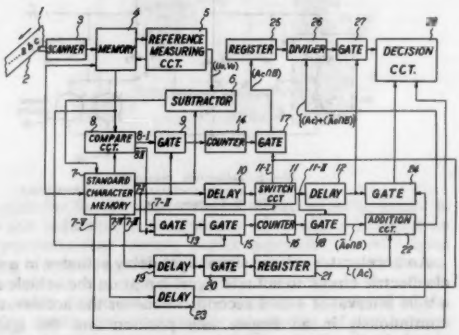
A logic circuit to effect the comparison of a number m of lines in a set of n lines A and energized in any sequence with a number q of energized lines in a set of p lines B. A matrix has a series of n inputs linked to the n row lines and a series of p inputs linked to p column lines. At the nodes of the row and column lines, an AND gate is provided having an inverted output. The inverted output is connected to one input each of two AND gates each having another input supplied by the respective row or column line to provide an output from the row or column line at the nodal point if, and only if there is no coincidence of input. The row and column lines are connected to OR gates and to a comparator, energization of the row or column OR gate, respectively, indicating that the larger number of row or column lines was energized initially; if both OR gates are deenergized, the comparator will indicate equality of numbers of input lines energized.

3,601,802

PATTERN MATCHING CHARACTER RECOGNITION SYSTEM

Yukio Nakagome, and Saburo Shirai, both of Tokyo-to, Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo-to, Japan

Filed Sept. 6, 1967, Ser. No. 665,920
Claims priority, application Japan, Sept. 9, 1966, 41-59,225
Int. Cl. G06k 9/08
U.S. Cl. 340—146.3 Q 4 Claims



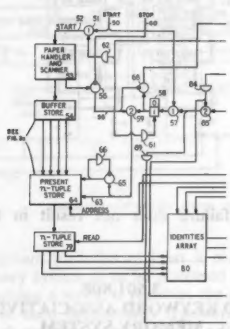
A pattern matching character recognition system in accordance with pattern matching method, where for each of

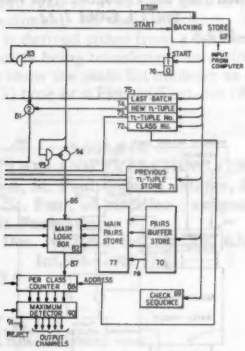
input characters, a first kind of standard pattern included substantially in all the same named input characters and a second kind of standard pattern including substantially all the same named input characters are previously established for each of the input characters to be recognized, and the names of the respective input characters are determined in consideration of results obtained from respective compare operations between input characters and each of the two kinds of standard patterns.

3,601,803
PATTERN RECOGNITION PROCESSES AND APPARATUS

Julian Richard Ullmann, Edgware, England, assignor to Her Majesty's Postmaster General, London, England

Filed Dec. 4, 1968, Ser. No. 781,035
Claims priority, application Great Britain, Dec. 7, 1967, 55757/67
Int. Cl. G06k 9/12
U.S. Cl. 340—146.3 R **3 Claims**



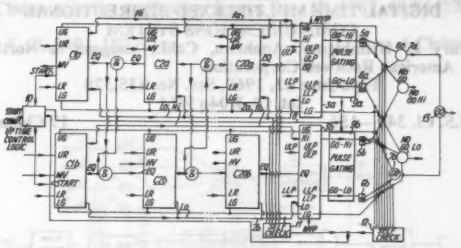


This specification describes a method of pattern recognition and apparatus for carrying out the method in which predetermined groups of *n* pattern elements are extracted from an unknown pattern and these groups are compared with corresponding groups from patterns of known class to identify the unknown pattern. The invention lies in the manner of comparison of the groups of *n* pattern elements and involves the examination of a group of elements from the unknown pattern to ascertain if there is a partition into parts of this group such that all of the parts belong to partitions into parts of the corresponding groups derived from the known patterns belonging to any one class. The parts of the partition of the group from the unknown pattern are also examined to ascertain whether they belong to a set of parts, each of which is the only part belonging to partitions of two different known patterns of the one class, such that these partitions are exclusively composed of parts obeying this last condition. It is decided that the group belongs to the one class if it satisfies both of the above conditions and the unknown pattern is identified as belonging to the one class if most of the groups derived from it belong to that class.

3,601,804
DIGITAL COMPARATOR UTILIZING DUAL CIRCUITS FOR SELF-CHECKING

Charles Thomas Wainwright, Stevenage, and Peter H. Pearson, Letchworth, both of, England, assignors to British Aircraft Corporation Limited, London, England

Filed Mar. 14, 1969, Ser. No. 807,385
Int. Cl. G06f 7/02, 11/00
U.S. Cl. 340—146.2 **3 Claims**

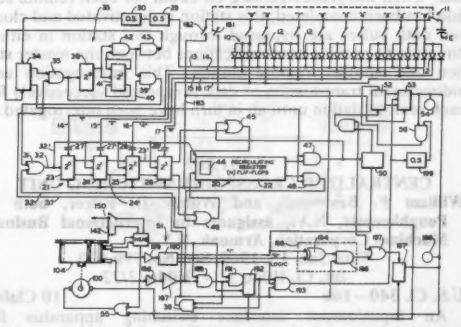


The invention relates to a digital comparator for use in automatic test equipment for assessing whether a measured binary response from a test object lies within predetermined tolerance limits. The comparator includes two banks of identical comparator bit units with upper and lower registers for storing the upper and lower tolerance limits respectively. The measured response is compared initially with the upper tolerance limit and subsequently with the lower tolerance limit if the result of the first comparison indicates that the measured value is less than the upper tolerance limit. The two banks are gated together between each unit such that the comparison of any one bit only takes place if the comparison of the preceding bit produces an identical signal from each comparator bank.

3,601,805
CREDIT CARD VERIFIER APPARATUS

Richard K. Snook, Bridgeton, Mo., assignor to Research Systems Corporation, Bridgetown, Mo.

Filed Dec. 22, 1967, Ser. No. 692,975
Int. Cl. H04q 9/00
U.S. Cl. 340—149 R **46 Claims**



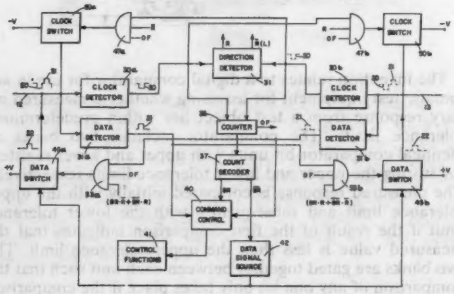
An apparatus for electronically comparing customer credit card numbers with a stored list of invalid credit card numbers and providing an indication whenever a favorable comparison occurs. A drum removably holds a magnetic multitrack tape with invalid card numbers recorded thereon in binary coded decimal form. A reading head is shifted from track to track on the multitrack tape and senses the signals

on the tape. A logic circuitry is provided for comparing the card number with the readout of the drum. The reading head detects a logical pulse and this in turn allows a subsequently detected synchronizing pulse detected by a synchronous head to pass and clock a transfer flip-flop circuit. The read credit card number is transferred to a shift register and is compared serially bit-by-bit with the output of the transfer flip-flop circuit in a half adder. A recirculating output from the shift register is also provided for returning signals to the input thereof. A bad card flip-flop receives an input whenever there is no sum output from the half adder for the series of digits.

3,601,806
DIGITAL TIME MULTIPLEXED BIDIRECTIONAL COMMUNICATIONS SYSTEM

Gary L. Heimbigner, Anaheim, Calif., assignor to North American Rockwell Corporation

Filed June 23, 1969, Ser. No. 835,320
Int. Cl. H04q 9/14
U.S. Cl. 340—151 **17 Claims**



Digital signals are bidirectionally transmitted between a master station and a plurality of remote stations on a single wire which serially interconnects all the stations. A connection is provided from the last remote station directly back to the master station. Each station is successively interrogated by means of clock pulses transmitted from the master station, data being transmitted from the master station to the remote station on certain predetermined digital bits established by the clock pulses and data being transmitted from the remote station to the master station on certain other predetermined bits. When the predetermined bit count for each remote station has been completed, this station is deactivated and clock and data pulses are bypassed through this station in either direction to provide communications between the master station and another remote station. This interrogation and bidirectional transmission of data is repeated successively for each remote station until all in turn have been interrogated.

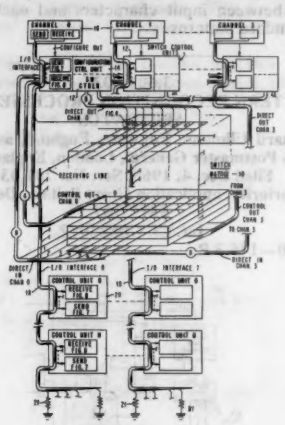
3,601,807
CENTRALIZED CROSSPOINT SWITCHING UNIT

William F. Beausoleil, and Wilbur D. Pricer, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 13, 1969, Ser. No. 790,680
Int. Cl. H04q 5/14; H04m 3/22
U.S. Cl. 340—166 **10 Claims**

An input/output interface switching apparatus for switching I/O interfaces connecting I/O control units between channels. A matrix of transistor cross-point switches is provided for attaching one or more strings of control units to one or more channels. These strings of control unit are switched between the channels under configuration control.

The cross-points are arranged so that a single failure within one interface affects at most only the channel to which the interface is associated. The switching matrix is physically centralized to minimize the number of I/O interface cables and connectors. The switching functions are, however, logically decentralized from a reliability standpoint so that a sin-

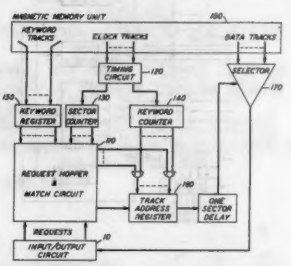


gle component failure does not result in total switching system failure.

3,601,808
ADVANCED KEYWORD ASSOCIATIVE ACCESS MEMORY SYSTEM

David Vlack, Aurora, Ill., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed July 18, 1968, Ser. No. 745,738
Int. Cl. G06f 7/22
U.S. Cl. 340—172.5 **9 Claims**

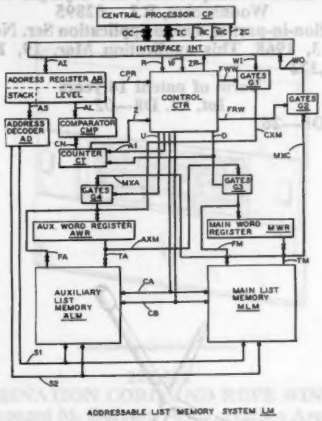


Circuitry is disclosed which uses a rotating magnetic disc file as an associative access memory. Each block of data stored on the file has associated with it a keyword, which keyword is used to access that particular block of data. The disc is partitioned into angular sectors and the blocks of data are stored in concentric, circular tracks as one block per sector per track, having their associated keywords recorded in radial tracks in the preceding sector. Data requests, including keyword information, are stored in a request hopper and are all simultaneously compared with each keyword as it is read from the disc. When a match occurs, the track defined by the matched keyword is read during the next sector in order to retrieve the requested block of data. Data requests may alternatively specify the track and sector address of a desired data block.

3,601,809
ADDRESSABLE LIST MEMORY SYSTEMS

Harry J. Gray, Springfield, and Willis K. King, Philadelphia, both of, Pa., assignors to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

Continuation-in-part of application Ser. No. 723,406, Apr. 23, 1968. This application Nov. 4, 1968, Ser. No. 777,979
Int. Cl. G11c 7/00
U.S. Cl. 340—172.5 21 Claims



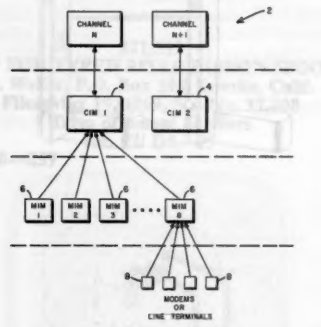
ADDRESSABLE LIST MEMORY SYSTEM LM

A memory system includes at least a main list memory. When the memory system is to be accessed for an operation of reading or writing a word, it receives the desired word address. Words are then sequentially transferred from the list memory. As each word is transferred, its address is indicated as available. When a predetermined relationship, such as equality is detected between the desired word address and indicated address, the read or write operation is performed. In the several embodiments of the disclosure, the indicated available address is derived either from a counter or from the contents of the words being transferred. In addition, the various embodiments show the main list memory as either a Last-in First-out (LIFO) type or a First-in First-out (FIFO) type.

3,601,810
SEGREGATION AND BRANCHING CIRCUIT

Duane H. Anderson, St. Paul; Peter A. Meyer, Roseville, and Paul D. Byrns, St. Paul, all of, Minn., assignors to Comcet Incorporated, St. Paul, Minn.

Filed Dec. 30, 1968, Ser. No. 787,632
Int. Cl. G06f 7/00
U.S. Cl. 340—172.5 6 Claims

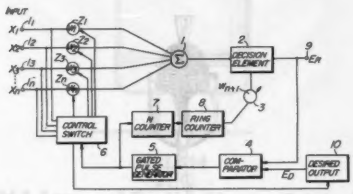


A data storage control circuit which decodes incoming characters and produces signals which cause the characters themselves to be stored sequentially in a normal buffer area in memory or individually segregated in a second buffer area in memory or stored in both of these areas simultaneously and which can switch the normal buffer area to a predetermined location in memory whereby the incoming characters are routed away from the old buffer area in memory to the new buffer area.

3,601,811
LEARNING MACHINE

Hirokazu Yoshino, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 9, 1968, Ser. No. 782,374
Claims priority, application Japan, Dec. 18, 1967, 42/82473
Int. Cl. G06f 11/00
U.S. Cl. 340—172.5 6 Claims

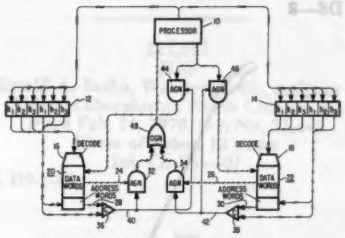


A learning machine having a decision element, a comparator, a learning pulse generator, a monostable circuit, a multistable circuit, a control switch circuit and a signal delay circuit. All these circuits are in the form of logic circuits whereby the machine can fully automatically and digitally be controlled until an actual output derived in response to application of input patterns coincides with a desired output value for the correct classification of the input patterns.

3,601,812
MEMORY SYSTEM

Joseph A. Weisbecker, Cherry Hill, N.J., assignor to RCA Corporation

Filed Jan. 22, 1969, Ser. No. 793,043
Int. Cl. G11c 15/00, 7/00
U.S. Cl. 340—172.5 21 Claims



Memory system for buffering several computers to a central storage unit or a computer to several small memory units, and a partitioned address scheme for the efficient use thereof. The digits of the address are decomposed into two disjoint subsets, one of which is used as a buffer memory address and the other of which is stored with the data word to effect identification thereof.

DESIGNS

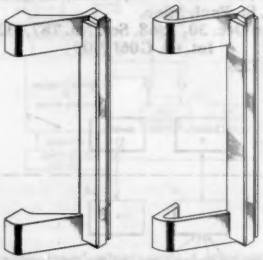
AUGUST 24, 1971

221,506
COMBINED TOILET BRUSH AND HOLDER
Robert A. O'Neil, Glen Ellyn, Ill., assignor to Kellogg Brush Manufacturing Co., Easthampton, Mass.
Filed May 27, 1970, Ser. No. 23,175
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D4—9

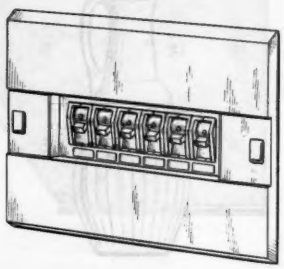
221,507
ELECTRIC GRASS TRIMMER
Roderick F. Bunyea, Cockeysville, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.
Filed July 24, 1970, Ser. No. 24,116
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—8

221,508
AUTOMOBILE LUG WRENCH
Normand L. Chapdelaine, 124 Olympic Ave., Woonsocket, R.I. 02895
Continuation-in-part of design application Ser. No. 14,431, Nov. 13, 1968. This application Mar. 19, 1969, Ser. No. 16,322
Term of patent 14 years
Int. Cl. D8—*02*
U.S. Cl. D8—26

221,509
DOOR PULL
Malcolm Leland, Box 54, Potrero, Calif. 92063
Filed Apr. 10, 1970, Ser. No. 22,375
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—171



221,510
COMBINED COVERING PLATE AND SWITCHES FOR ELECTRICAL STATIONS, ELECTRICAL PANELS AND THE LIKE
Giuseppe Zecca, Via Monte Tabor 16, Varese, Italy
Filed June 16, 1970, Ser. No. 23,522
Claims priority, application Italy Jan. 10, 1970
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D8—181



221,511
COMBINATION CORD AND ROPE WINDER
Leonard M. Dufault, 609 N. Naches Ave., Yakima, Wash. 98901
Filed May 14, 1970, Ser. No. 22,977
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—220

221,512
CLIP FOR TYPEWRITER RIBBON SPOOLS
Robert W. Weller, P.O. Box 398, Lomita, Calif. 90717
Filed May 19, 1969, Ser. No. 17,208
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—259

221,513
JUG
Donald J. Leary and Doyle J. Morgan, Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio
Filed July 17, 1970, Ser. No. 24,009
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—39

221,514
JUG
Donald J. Leary and Doyle J. Morgan, Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio
Filed July 17, 1970, Ser. No. 24,011
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—39

221,515
JUG
Harold A. Betka, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Feb. 16, 1970, Ser. No. 21,443
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—40

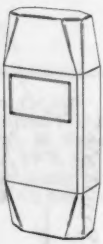
221,516
JUG OR SIMILAR ARTICLE
Harry Crisci, P.O. Box 231, New Castle, Pa. 16103
Filed Mar. 18, 1970, Ser. No. 21,950
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—40

221,517
BOTTLE
Warren J. Luedtke, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.
Filed June 1, 1970, Ser. No. 23,239
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—42

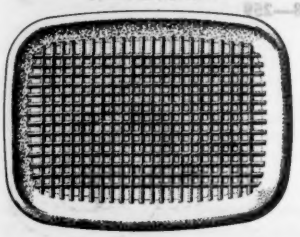
221,518
JUG
Richard L. Weckman, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed July 1, 1970, Ser. No. 23,792
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—43

221,519
JUG
James E. Plummer, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed July 1, 1970, Ser. No. 23,794
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—48

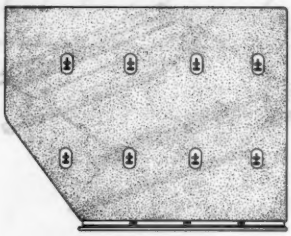
221,520
COMBINED BOTTLE AND OVERCAP THEREFOR
James E. Plummer, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed July 17, 1970, Ser. No. 24,008
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—130



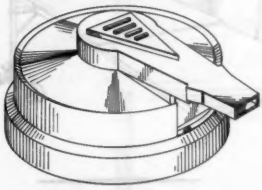
221,521
PACKAGING TRAY
Kenneth L. Crabtree, Fairfield, Maine, assignor to Keyes Fibre Company, Waterville, Maine
Filed Apr. 27, 1970, Ser. No. 22,642
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—219



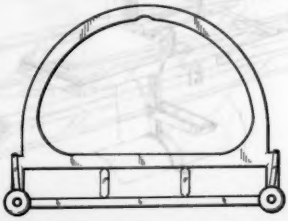
221,522
SHIPPING CONTAINER
Oscar W. Meller, Akron, Edsel F. Moffitt, Tallmadge, and Frank C. Morse and Walter F. Sprick, Akron, Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio
Filed Jan. 16, 1970, Ser. No. 20,952
Term of patent 14 years
Int. Cl. D9—*04*
U.S. Cl. D9—246



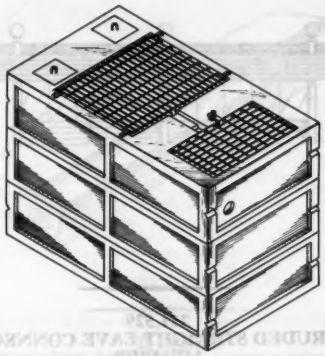
221,523
DISPENSER CAP FOR A PRESSURIZED CONTAINER
Jimmie L. Mason, Hacienda Heights, and Howard Clyde Tracy, Jr., Los Angeles, Calif., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Apr. 3, 1970, Ser. No. 22,234
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—258



221,524
BAG CARRYING HANDLE
Allen I. Field, 147 Valley Stream Road, Larchmont, N.Y. 10538, and Sidney P. Field, 226 Beach 134th St., Belle Harbor, N.Y.
Filed July 30, 1970, Ser. No. 24,220
Term of patent 14 years
Int. Cl. D9—*02*
U.S. Cl. D9—292



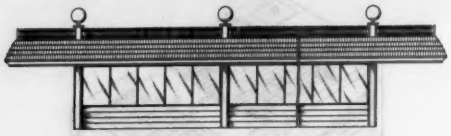
221,525
SEWAGE TREATMENT PLANT
David S. MacLaren, 21176 Brantley Road, Shaker Heights, Ohio 44120
Filed Mar. 17, 1970, Ser. No. 21,933
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D13—1



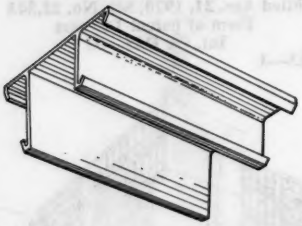
221,526
BUILDING
Walter Fisher, Brookline, Mass., assignor to Fox Ledge Corp.
Filed Apr. 21, 1970, Ser. No. 22,543
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1

221,527
CAR WASH STRUCTURE
James W. Baker, Santa Monica, Calif., assignor to Hunter Structures, Inc., Los Angeles, Calif.
Filed July 20, 1970, Ser. No. 24,023
Term of patent 14 years
Int. Cl. D25—*04*
U.S. Cl. D13—1

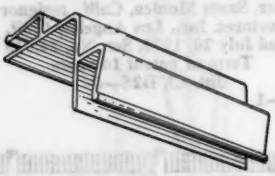
221,528
CAR WASH STRUCTURE
James W. Baker, Santa Monica, Calif., assignor to Hunter Structures, Inc., Los Angeles, Calif.
Filed July 20, 1970, Ser. No. 24,026
Term of patent 14 years
Int. Cl. D25—*04*
U.S. Cl. D13—1



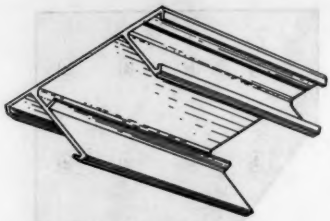
221,529
EXTRUDED STRAIGHT EAVE CONNECTOR MEMBER
Irvine Kimmel, 2375 NW. 75th St., Miami, Fla. 33155
Filed Aug. 17, 1970, Ser. No. 24,542
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



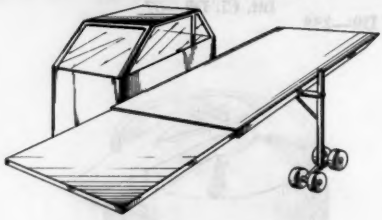
221,530
EXTRUDED CORNER TRIM MEMBER
Irvine Kimmel, 2375 NW. 75th St., Miami, Fla. 33155
Filed Aug. 17, 1970, Ser. No. 24,543
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



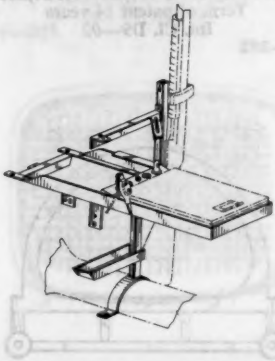
221,531
EXTRUDED TAPERED EAVE CONNECTOR MEMBER
Irvine Kimmel, 2375 NW. 75th St., Miami, Fla. 33155
Filed Aug. 17, 1970, Ser. No. 24,545
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



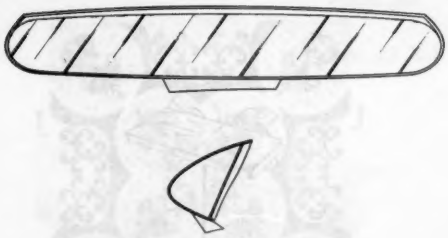
221,532
COMBINED MOTOR VEHICLE AND ADJUSTABLE LOADING PLATFORM
Bernard S. Sain, 321 Charnwood Road, New Providence, N.J. 07974
Filed Apr. 9, 1970, Ser. No. 22,346
Term of patent 3½ years
Int. Cl. D12—*09*
U.S. Cl. D14—3



221,533
SQUAD CAR EQUIPMENT CONSOLE OR SIMILAR ARTICLE
Lyle M. Browning, 1408 Garrett St., Yakima, Wash. 98902
Filed July 10, 1969, Ser. No. 18,170
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D14—6



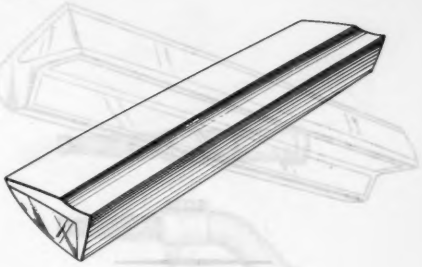
221,534
STATIONARY CAR-TOP MIRROR
Lynn Harold Hodge, Highland Park, Mich.
(12618 Wyoming Ave., Detroit, Mich. 48238)
Filed Aug. 13, 1969, Ser. No. 18,668
Term of patent 3½ years
Int. Cl. D12—*16*
U.S. Cl. D14—6



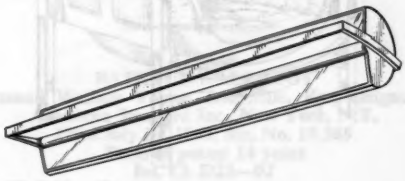
221,535
WINDSCREEN WIPER BLADE HOLDER
Timothy H. Norman, Scotton, near Knaresborough, England, assignor to Spafax (1965) Limited, Chippenham, Wiltshire, England
Filed Mar. 5, 1970, Ser. No. 21,755
Claims priority, application Great Britain Sept. 10, 1969
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D14—6

221,536
PERISCOPE-TYPE REAR VIEW MIRROR
Lynn Harold Hodge, Highland Park, Mich.
(12618 Wyoming Ave., Detroit, Mich. 48238)
Filed Apr. 6, 1970, Ser. No. 22,262
Term of patent 3½ years
Int. Cl. D12—*14*
U.S. Cl. D14—6

221,537
PERISCOPE-TYPE REAR VIEW MIRROR
Lynn Harold Hodge, Highland Park, Mich.
(12618 Wyoming Ave., Detroit, Mich. 48238)
Filed Apr. 6, 1970, Ser. No. 22,269
Term of patent 3½ years
Int. Cl. D12—*14*
U.S. Cl. D14—6

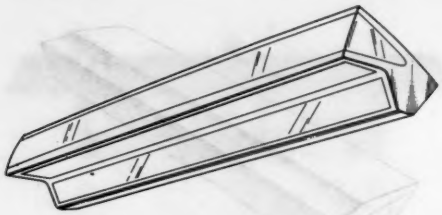


221,538
PERISCOPE-TYPE REAR VIEW MIRROR
Lynn Harold Hodge, Highland Park, Mich.
(12618 Wyoming Ave., Detroit, Mich. 48238)
Filed Apr. 6, 1970, Ser. No. 22,270
Term of patent 3½ years
Int. Cl. D12—*14*
U.S. Cl. D14—6

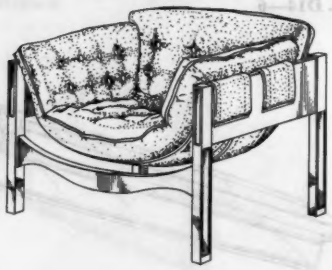


221,539
PERISCOPE-TYPE REAR VIEW MIRROR
Lynn Harold Hodge, Highland Park, Mich.
(12618 Wyoming Ave., Detroit, Mich. 48238)
Filed Apr. 6, 1970, Ser. No. 22,271
Term of patent 3½ years
Int. Cl. D12—*14*
U.S. Cl. D14—6

221,540
PERISCOPE-TYPE REAR VIEW MIRROR
Lynn Harold Hodge, Highland Park, Mich. (12618 Wyoming Ave., Detroit, Mich. 48238)
Filed Apr. 6, 1970, Ser. No. 22,272
Term of patent 3½ years
Int. Cl. D12—*14*
U.S. Cl. D14—6



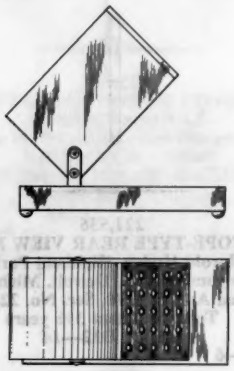
221,541
CHAIR
Morris F. Fisher, 9820 Deerfield Circle, Carmel, Ind. 46032
Filed Apr. 23, 1970, Ser. No. 22,604
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D15—1



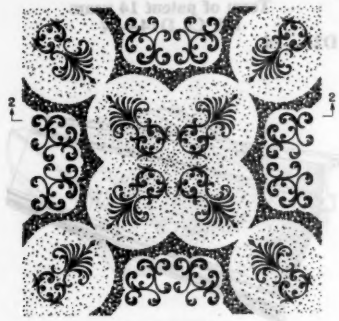
221,542
CHAIR
Morris F. Fisher, 9820 Deerfield Circle, Carmel, Ind. 46032
Filed Apr. 23, 1970, Ser. No. 22,605
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D15—1

221,543
SHOWER STEP STOOL
George W. Lassen, 834 P Ronda Mendoza, Laguna Hills, Calif. 92653
Filed Dec. 22, 1969, Ser. No. 20,589
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D15—8

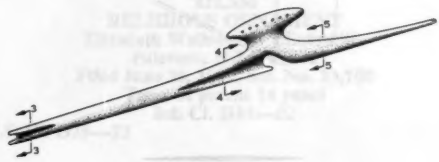
221,544
PIPETTE RACK
Donald H. McGlory, 5 Lee Ann Drive, Barrington, R.I. 02806
Filed Feb. 24, 1970, Ser. No. 21,600
Term of patent 14 years
Int. Cl. D24—*02*; D6—*01*
U.S. Cl. D16—1



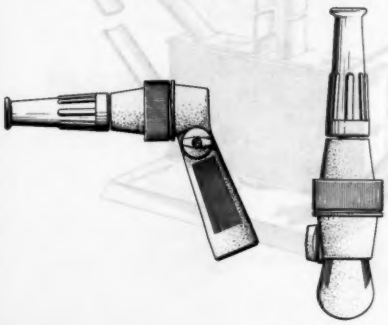
221,545
FLOOR TILE OR SIMILAR ARTICLE
John Stanley Madsen, Montgomery Township, Belle Mead County, N.J., assignor to GAF Corporation, New York, N.Y.
Filed June 5, 1970, Ser. No. 23,328
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D18—2



221,546
TIP-UP FOR ICE FISHING
Karl G. T. Happe, 38 Tara Ave., Scarborough, Ontario, Canada
Filed Oct. 2, 1969, Ser. No. 19,382
Term of patent 14 years
Int. Cl. D22—*08*
U.S. Cl. D22—22

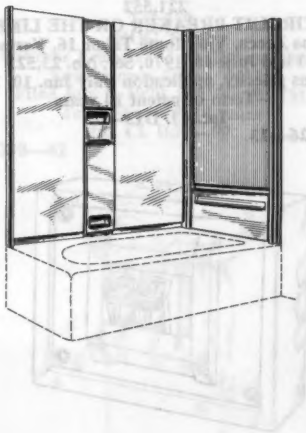


221,547
MULTIPLE PURPOSE SPRAY GUN
Raymond Kieves, 421 Wilson St. NE., Minneapolis, Minn. 55413
Filed Apr. 15, 1970, Ser. No. 22,439
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—17

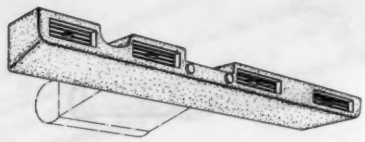


221,548
COMBINATION WATER NOZZLE AND SPRAY HEAD
Willliam B. Delamater, 9114 Valley View, Whittier, Calif. 90603
Filed Dec. 4, 1969, Ser. No. 20,352
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—34

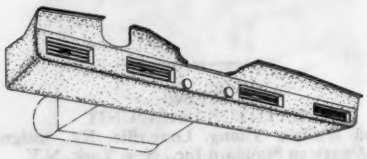
221,549
BATHTUB WALL UNIT
Raymond Wallace Young, Louisville, Ky., assignor to American Standard Inc., New York, N.Y.
Filed July 24, 1969, Ser. No. 18,385
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—49



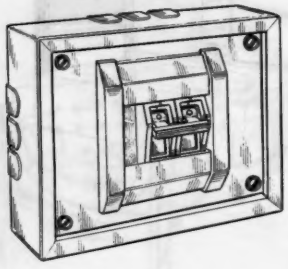
221,550
COMBINED OUTLET AND CONTROL PANEL FOR AN AUTOMOBILE AIR-CONDITIONER
Don P. Dixon, 1937 Shipman, San Antonio, Tex. 78219
Filed June 26, 1970, Ser. No. 23,680
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—142



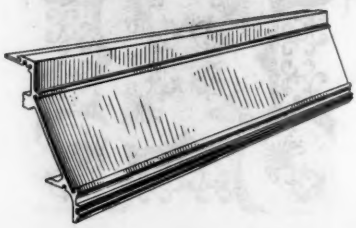
221,551
COMBINED OUTLET AND CONTROL PANEL FOR AN AUTOMOBILE AIR-CONDITIONER
Don P. Dixon, 1937 Shipman, San Antonio, Tex. 78219
Filed June 26, 1970, Ser. No. 23,688
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—142

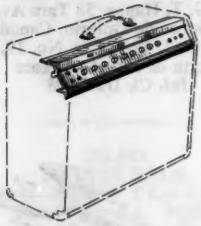


221,552
CIRCUIT BREAKER OR THE LIKE
Giuseppe Zecca, Via Monte Tabor 16, Verese, Italy
Filed June 16, 1970, Ser. No. 23,523
Claims priority, application Italy Jan. 10, 1970
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13

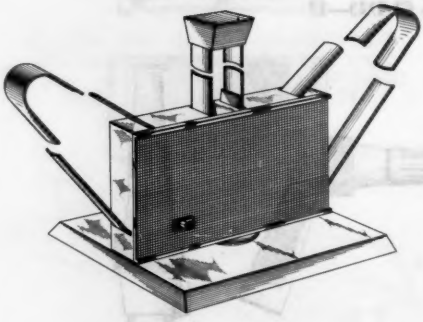


221,553
EXTRUDED PANEL FOR MUSICAL AND OTHER INSTRUMENTS
Murray S. Figlin, 432 Edgewood Road, Linden, N.J. 07036, and Roger F. Cox, 16 Hyacinth Drive, Fords, N.J. 08863
Continuation of design applications Ser. No. 16,102 and Ser. No. 16,103, both filed Mar. 7, 1969, and both now abandoned. This application Dec. 22, 1969, Ser. No. 20,579
Term of patent 14 years
Int. Cl. D14—*04*
U.S. Cl. D26—14

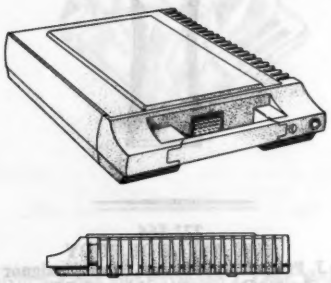




221,554
TELEVISION ANTENNA
Robert D. Kahn, Rockville Centre, N.Y., assignor to Fedtro, Inc., Rockville Centre, N.Y.
Filed Apr. 16, 1970, Ser. No. 22,461
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14

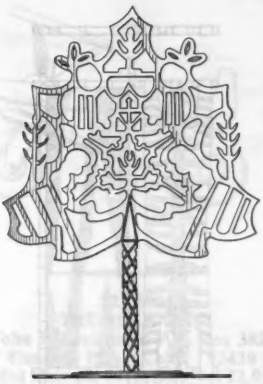


221,555
TWO-WAY RADIO OR SIMILAR ARTICLE
Rudolph W. Krolopp, Palatine, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed July 13, 1970, Ser. No. 23,916
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14

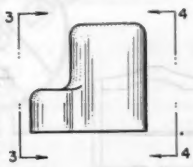


221,556
RELIGIOUS ORNAMENT
Elizabeth Wallace, 64 Clinton St., Paterson, N.J. 07522
Filed June 30, 1970, Ser. No. 23,758
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23

221,557
RELIGIOUS ORNAMENT
George M. Wallace, 64 Clinton St., Paterson, N.J. 07522
Filed June 30, 1970, Ser. No. 23,764
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23

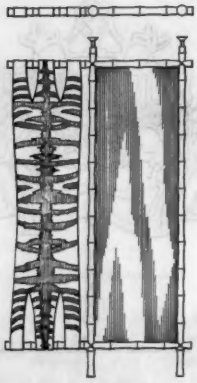


221,558
ANIMAL BED
Robert O. Zimmerman, 33542 Morris St., Wayne, Mich. 48184
Filed Apr. 3, 1970, Ser. No. 22,236
Term of patent 14 years
Int. Cl. D30—*06*
U.S. Cl. D30—41

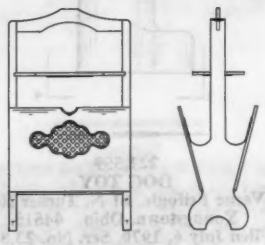


221,559
DOG TOY
LaVerne Frifogle, 61 N. Turner Road, Youngstown, Ohio 44515
Filed July 6, 1970, Ser. No. 23,831
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—42

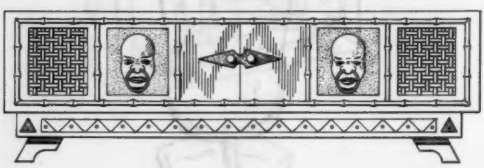
221,560
ROOM DIVIDER
John H. Jordan, Jr., 8124 S. Crandon Ave., Chicago, Ill. 60617
Filed Feb. 6, 1970, Ser. No. 21,312
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D33—1



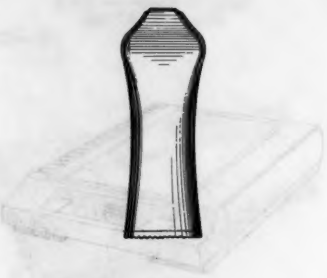
221,561
MAGAZINE RACK
Ransom Reaves, 679 E. McKellar, Memphis, Tenn. 38106
Filed Apr. 21, 1970, Ser. No. 22,549
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D33—2



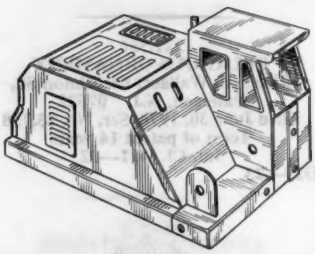
221,562
CONSOLE
John H. Jordan, Jr., 8124 S. Crandon Ave., Chicago, Ill. 60617
Filed Feb. 6, 1970, Ser. No. 21,311
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D33—19



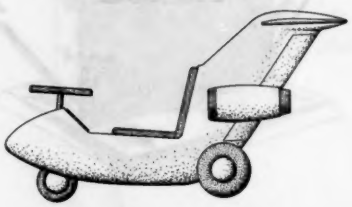
221,563
GOLF CLUB HEAD COVER
Edward G. Bourgeois, Northampton, Mass., assignor to A. G. Spalding & Bros., Inc., Chicopee, Mass.
Filed Apr. 2, 1970, Ser. No. 22,213
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5



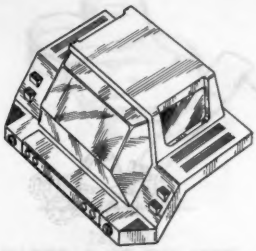
221,564
TOY BACKHOE BODY
Lee J. Pfeilsticker, Mound, Minn., assignor to Tonka Corporation, Mound, Minn.
Filed July 27, 1970, Ser. No. 24,127
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



221,565
RIDING TOY
George W. Dunbar, Nashville, Tenn., assignor to Kusan, Inc., Nashville, Tenn.
Filed July 27, 1970, Ser. No. 24,143
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15

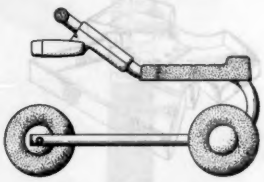


221,566
TOY TRUCK CAB
Ira Gilford, Thousand Oaks, Calif., assignor to Tonka Corporation, Mound, Minn.
Filed July 27, 1970, Ser. No. 24,128
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D34—15

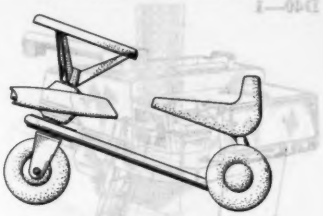


221,567
TOY VEHICLE
Calvin S. Cook and Raymond J. Lohr, Erie, Pa., assignors to Louis Marx & Co., Inc.
Filed Aug. 3, 1970, Ser. No. 24,289
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15

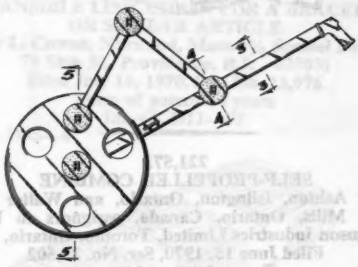
221,568
RIDING TOY
Daniel F. Krause, Nashville, Tenn., assignor to Kusan, Inc., Nashville, Tenn.
Filed Aug. 4, 1970, Ser. No. 24,296
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



221,569
RIDING TOY
Daniel F. Krause, Nashville, Tenn., assignor to Kusan, Inc., Nashville, Tenn.
Filed Aug. 4, 1970, Ser. No. 24,298
Int. Cl. D21—*01*
Term of patent 14 years
U.S. Cl. D34—15

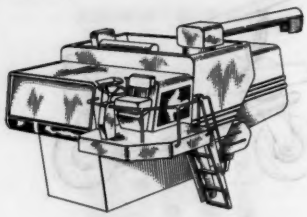


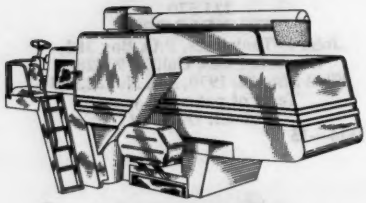
221,570
TRUNDLE TOY
John J. Tanhauser, P.O. Box 382, Cambria Pines, Calif. 93428
Filed May 13, 1970, Ser. No. 22,955
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



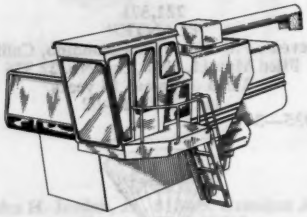
221,571
PLANTER
Lee H. Stevens, P.O. Box 710, Escondido, Calif. 92025
Filed May 11, 1970, Ser. No. 22,926
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3

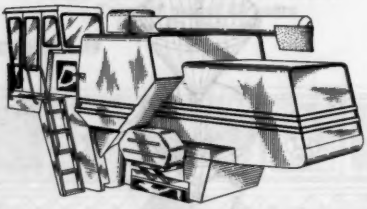
221,572
COMBINE HARVESTER
Robert Ashton, Islington, Ontario, and Walter Hirsch, Don Mills, Ontario, Canada, assignors to Massey-Ferguson Industries Limited, Toronto, Ontario, Canada
Filed June 15, 1970, Ser. No. 23,501
Term of patent 14 years
Int. Cl. D12—*09;* D15—*03*
U.S. Cl. D40—1





221,573
SELF-PROPELLED COMBINE
Robert Ashton, Islington, Ontario, and Walter Hirsch, Don Mills, Ontario, Canada, assignors to Massey-Ferguson Industries Limited, Toronto, Ontario, Canada
Filed June 15, 1970, Ser. No. 23,502
Term of patent 14 years
Int. Cl. D15—*03;* D12—*09*
U.S. Cl. D40—1

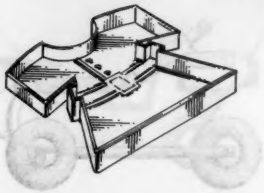




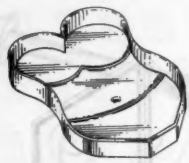
221,574
MOTOR SHROUD FOR LAWN MOWER
Roderick F. Bunyea, Cockeysville, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.
Filed July 28, 1970, Ser. No. 24,174
Term of patent 14 years
Int. Cl. D8—*01;* D15—*03*
U.S. Cl. D40—1

221,575
KITCHEN MIXER
Arthur C. Christensen, Thomaston, Conn., and Monte L. Levin, New York, N.Y., assignors to Scovill Manufacturing Company, Waterbury, Conn.
Filed June 3, 1970, Ser. No. 23,264
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D44—1

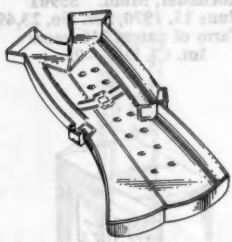
221,576
CAKEPAN OR THE LIKE
Florene Joy Ramboldt, 12026 Dresden Place, Los Angeles, Calif. 91344
Filed July 8, 1970, Ser. No. 23,869
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—1



221,577
CAKEPAN OR THE LIKE
Florene Joy Ramboldt, 12026 Dresden Place, Los Angeles, Calif. 91344
Filed July 8, 1970, Ser. No. 23,868
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—1

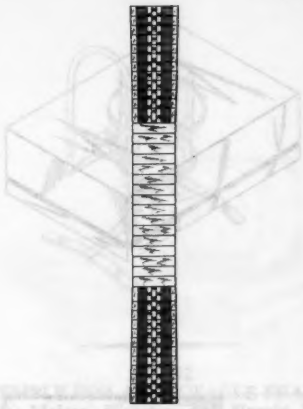


221,578
CAKEPAN OR THE LIKE
Florene Joy Ramboldt, 12026 Dresden Place, Los Angeles, Calif. 91344
Filed July 8, 1970, Ser. No. 23,867
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—1

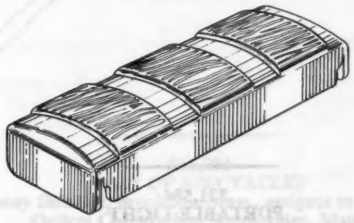


221,579
WATCH BRACELET OR SIMILAR ARTICLE
Yuen Sang Poon, 36 Kam Wah St., Hong Kong
Filed Apr. 24, 1970, Ser. No. 22,624
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—4

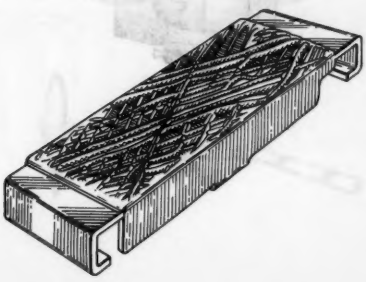
221,580
WATCH BRACELET OR SIMILAR ARTICLE
Yuen Sang Poon, 36 Kam Wah St., Hong Kong
Filed Apr. 24, 1970, Ser. No. 22,625
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—4



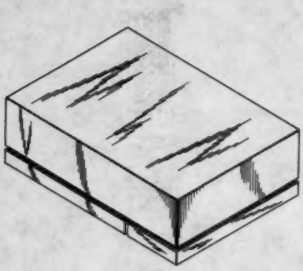
221,581
EXPANSIBLE LINK CHAIN FOR A BRACELET OR SIMILAR ARTICLE
Murray L. Cowan, Norwood, Mass. (% Speidel Division, 70 Ship St., Providence, R.I. 02903)
Filed July 16, 1970, Ser. No. 23,976
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—4

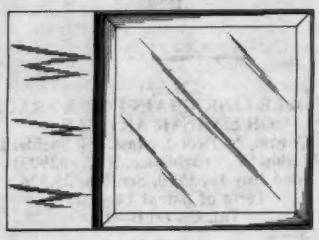


221,582
EXPANSIBLE LINK CHAIN FOR A BRACELET OR SIMILAR ARTICLE
Raymond C. Fontaine, Greenville, R.I. (% Speidel Division, 70 Ship St., Providence, R.I. 02903)
Filed July 20, 1970, Ser. No. 24,031
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—4



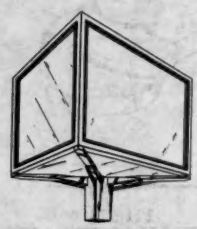
221,583
POST-MOUNTED LUMINAIRE
Anthony C. Donato, Westfield, N.J., assignor to Lightolier Incorporated, Jersey City, N.J.
Filed Dec. 24, 1969, Ser. No. 20,639
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31





221,584
PORTABLE LIGHT
Julian J. Wierzbicki, Peabody, and Harold L. Hough, Beverly, Mass., assignors to Sylvania Electric Products Inc.
Filed July 2, 1970, Ser. No. 23,816
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24

221,585
LIGHT FIXTURE
Buell Moore, Houston, Tex., assignor to Esquire, Inc., New York, N.Y.
Original design application Apr. 10, 1969, Ser. No. 16,662, now Patent No. 217,637, dated May 19, 1970. Divided and this application Mar. 3, 1970, Ser. No. 21,725
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31

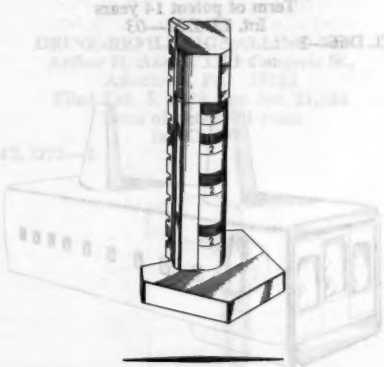


221,586
STEAM/AIR FINISHING CABINET
Richard H. Dison, 214 N. Broadway, Rochester, Minn. 55901
Filed June 15, 1970, Ser. No. 23,497
Term of patent 3½ years
Int. Cl. D15—*05*
U.S. Cl. D49—1

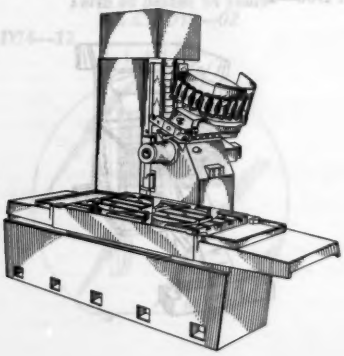
221,587
HIGH FREQUENCY PROBE
Edward E. Aslan, Plainview, N.Y., assignor to The Norda Microwave Corporation, Plainview, N.Y.
Filed Mar. 23, 1970, Ser. No. 21,999
Term of patent 14 years
Int. Cl. D10—*99*
U.S. Cl. D52—6

221,588
HIGH FREQUENCY PROBE
Edward E. Aslan, Plainview, N.Y., assignor to The Narda Microwave Corporation, Plainview, N.Y.
Filed Mar. 23, 1970, Ser. No. 22,010
Term of patent 14 years
Int. Cl. D10—*99*
U.S. Cl. D52—6

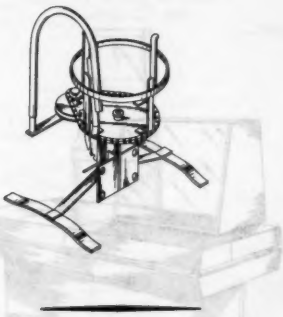
221,589
HEIGHT GAGE
Edgar P. Freer, Los Angeles, Calif., assignor to Hubach-Freer Corporation, Woodland Hills, Calif.
Filed May 25, 1970, Ser. No. 23,141
Term of patent 14 years
Int. Cl. D10—*08*
U.S. Cl. D52—6



221,590
MACHINING CENTER
Charles A. Larsen, Union Grove, Daniel J. Mousseau, Racine, and Kenneth M. Boutell, Franksville, Wis., assignors to Gorton Machine Corporation, Racine, Wis.
Filed June 22, 1970, Ser. No. 23,589
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D54—14



221,591
PORTABLE CEMENT MIXER
Dale E. Cooper, Main at Boise, Emmett, Idaho 83617
Filed May 15, 1970, Ser. No. 23,016
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D55—1



221,592
TEMPLE FOR A SPECTACLE FRAME
Richard R. Maiese, Webster, and Harold F. Whiting, Attleboro, Mass., assignors to American Optical Corporation, Southbridge, Mass.
Filed Mar. 25, 1970, Ser. No. 22,049
Term of patent 7 years
Int. Cl. D16—*08*
U.S. Cl. D57—1

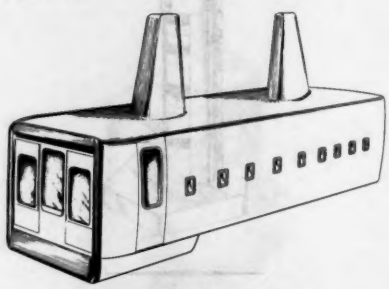
221,593
PAIR OF SPECTACLES
Anthony Shindler, Brookline, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed June 25, 1970, Ser. No. 23,677
Term of patent 7 years
Int. Cl. D16—*06*
U.S. Cl. D57—1

221,594
ONLINE/OFFLINE COMPUTER OUTPUT MICROFILMER
John Jamieson, Palo Alto, Calif., assignor to Peripheral Technology, Incorporated, Sunnyvale, Calif.
Filed June 24, 1970, Ser. No. 23,653
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1

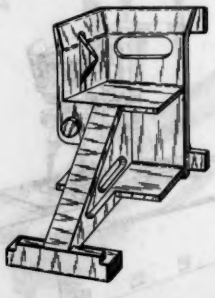
221,595
ONLINE/OFFLINE COMPUTER OUTPUT MICROFILMER
John Jamieson, Palo Alto, Calif., assignor to Peripheral Technology, Incorporated, Sunnyvale, Calif.
Filed June 24, 1970, Ser. No. 23,654
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1

221,596
FONT OF TYPE
David P. Brittig, Lombard, Ill., assignor to Rixson Inc., Franklin Park, Ill.
Filed Mar. 4, 1970, Ser. No. 21,738
Term of patent 14 years
Int. Cl. D18—*04*
U.S. Cl. D64—12

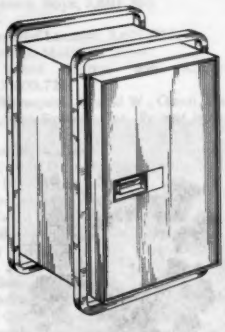
221,597
PASSENGER TRANSFER VEHICLE
Walter S. Eggert, Jr., Huntingdon Valley, Pa. (% The Budd Co., 2450 Hunting Park Ave., Philadelphia, Pa. 19132)
Filed Dec. 30, 1969, Ser. No. 20,696
Term of patent 14 years
Int. Cl. D12—*03*
U.S. Cl. D66—1



221,598
SUPPORTING PEDESTAL FOR SHIPPING CONTAINERS
Stephen G. Peterson, 6038 Westwood Terrace, Norfolk, Va. 23508
Filed Mar. 19, 1970, Ser. No. 21,964
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D66—2

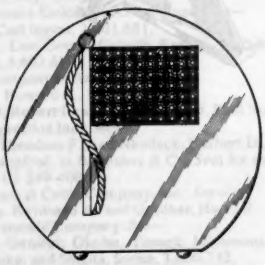


221,599
ICE CHEST
Robert P. Brown, Greenwich, Conn., assignor to Poloron Products, Inc., New Rochelle, N.Y.
Filed May 18, 1970, Ser. No. 23,036
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D67—4

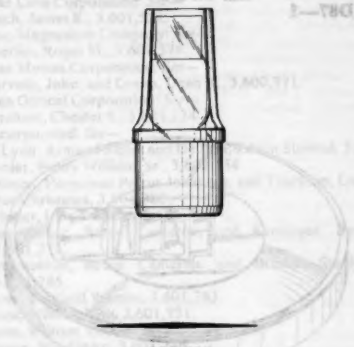


221,600
DRINK-REFILL SIGNALLING BELL
Arthur H. Anson, 3301 Congress St., Allentown, Pa. 18103
Filed Feb. 5, 1970, Ser. No. 21,288
Term of patent 14 years
Int. Cl. D31
U.S. Cl. D72—1

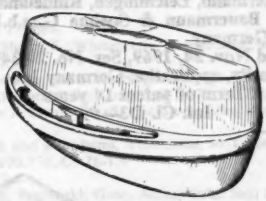
221,601
PAPERWEIGHT
Varkis A. Markarian, 3 Applegate Road, Cranston, R.I. 02920
Filed May 18, 1970, Ser. No. 23,033
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—12



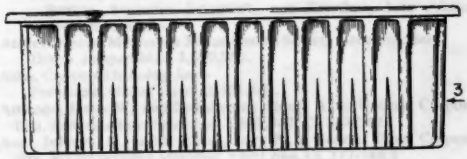
221,602
SHOE POLISH KIT
Arnold H. Neis, Hillsdale, N.J., assignor to Knomark Inc., Jamaica, N.Y.
Filed June 11, 1970, Ser. No. 23,437
Term of patent 14 years
Int. Cl. D28—*99*
U.S. Cl. D86—11



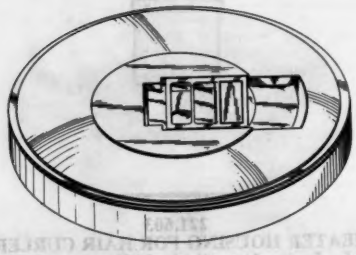
221,603
HEATER HOUSING FOR HAIR CURLERS
Monte L. Levin, New York, N.Y., assignor to Scovill Manufacturing Company, Waterbury, Conn.
Filed Feb. 18, 1970, Ser. No. 21,482
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10



221,604
PLASTIC CARRYING TRAY
Michael Rodolakis, Worcester, Mass., assignor to Dapol Plastics Inc., Worcester, Mass.
Filed Aug. 27, 1969, Ser. No. 18,906
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1



221,605
CONTAINER FOR MAGNETIC RECORDING DISC
John C. Davey, Boundary Cottage, Telegraph Hill, near Redlynch, Salisbury, Wiltshire, England; Hugh G. Dickie, 18 Rosslyn Close, North Baddesley, Hampshire, England; Albert H. Metcalfe, 21 Brunswick Road, Fair Oak, Hampshire, England; and Leo J. Rigbey, 12 Braeside Close, Winchester, Hampshire, England
Filed Nov. 13, 1969, Ser. No. 20,228
Claims priority, application Great Britain May 31, 1969
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1



221,606
UMBRELLA SHEATH
Richard Zimmermann, Leichlingen, Rhineland, Germany, assignor to Bauermann & Soehne G.m.b.H., Hilden, Rhineland, Germany
Filed Nov. 24, 1969, Ser. No. 20,249
Claims priority, application Germany June 7, 1969
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1

221,607
TOWEL OR SIMILAR ARTICLE
Leonard C. Clementi, Huntington, N.Y., assignor to Cannon Mills Company, Kannapolis, N.C.
Original design application Nov. 25, 1968, Ser. No. 14,658, now Patent No. 216,417, dated Dec. 30, 1969. Divided and this application Nov. 20, 1969, Ser. No. 20,189
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D92—26

221,608
BASE SUPPORT UNIT FOR A TENTERING MACHINE
Frederick Hyatt, Providence, R.I., assignor to Bevis Industries, Inc., Providence, R.I.
Filed May 27, 1968, Ser. No. 12,083
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D92—15

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 24TH DAY OF AUGUST, 1971

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AB Akerlund & Ransing: *See—*
Benzon-Petersen, Boye, 3,601,305.

AB Vapor: *See—*
Olsson, Hans Olof Lennart, 3,601,095.

Abbott, John Osborne McEwan: *See—*
Stamper, Robin Harry; and Abbott, John Osborne McEwan,3,600,724.

Abel, Kenneth; Blomquist, Arnold W.; Olson, Richard K.; and Ufford, Keith A., to Litton Systems, Inc. Patient isolator room. 3,601,031, Cl. 98-33.

Abercrombie, Bolling A.: *See—*
McMurry, Everett D.; and Abercrombie, Bolling A.,3,601,191.

Abitibi St. Anne Paper Ltd.: *See—*
Hamilton, Douglas D.; and Boivin, Joseph J. R., 3,601,169.

Abraham, Dennis G.; Dohanich, George J.; and Pawletko, Joseph P., to International Business Machines Corporation. Stepping motor constant velocity drive including closed end open loop control. 3,601,678, Cl. 318-685.

Aerocost S. A.: *See—*
Wanner, Maurice Paul; and Wallis, Neil Rudolph, 3,601,519.

Aerojet General Corporation: *See—*
Steele, Robert D.; and Farris, Richard J., 3,600,939.

Aerospace America, Inc.: *See—*
Kontranowski, Edward S., 3,601,139.

Afner, Kermit J. Rotary machine. 3,601,514, Cl. 418-188.

Agens, Martyn L.; and Wallace, Robert S., said Wallace assor to said Agens. Adjustable golf club head. 3,601,399, Cl. 273-79.

Ahearn, George P.; and Kiel, Othar M., to Esso Production Research Company. Hydraulic fracturing operations. 3,601,198, Cl. 166-308.

Aijala, Sulo A., to Intricate Machine & Engineering Inc. Device for positioning a saw in a machine for operating on the teeth of the saw. 3,600,980, Cl. 76-25.

Air Factors, Inc.: *See—*
Lambert, Robert R., 3,601,032.
Lambert, Robert R., 3,601,033.

Aircraft Mechanics, Inc.: *See—*
Pearne, Florentin J.; Pearne, Frank S.; and Robson, Frederick G., 3,601,266.

Airpax Electronics, Inc.: *See—*
Stone, Clifford Douglas, 3,601,083.

Akachi, Hisateru; Hagi, Masaki; and Nita, Yoshihiro, to Oki Densen Kabushiki Kaisha. Method of manufacturing wire memory plane. 3,600,800, Cl. 29-604.

Alberts, Herbert. Stringers for fasteners. 3,600,766, Cl. 24-205.12

Albertson, Victor N. Fluid motor or pump. 3,601,013, Cl. 91-501.

Albright, Roy H., to I-T-E Imperial Corporation. Insulator mounting in a high power electrical distribution system. 3,601,663, Cl. 317-103.

Alexander, Charles F., Jr., to Brunswick Corporation. Engine piston. 3,601,008, Cl. 92-172.

Algemene Kustzijle Unie, N.V.: *See—*
van der Ploeg, Jacobus Pieter; and Harmsen, Antoni Reinirus, 3,601,016.

Alibert, Vernon P. Connector device for supporting cables and for additionally providing an electrical connection. 3,601,766, Cl. 339-97.

Allis-Chalmer Manufacturing Company: *See—*
Mayo, Howard A., Jr., 3,601,497.

Allis-Chalmers Manufacturing Company: *See—*
De Noyer, Donald B., 3,600,779.
Giencke, Donald P., 3,601,323.
Kolacz, Ferdynand; and Longshore, Donald W., 3,601,231.
McBurnett, James R., 3,601,504.
Redfern, Calvin E., 3,601,014.
Schroeder, Earle E., 3,601,498.

Allison, David Co., Inc.: *See—*
Meadows, Ray, 3,600,743.

Allmanna Svenska Elektriska Aktiebolaget: *See—*
Boksjo, Carl Ingvar, 3,601,681.
Eriksson, Lars Goran; Goliath, Karl-Gunnar; and Larsson, Bo Ingemar, 3,601,670.

Aluminum Company of America: *See—*
Kutcher, Howard R., 3,601,273.
La Barge, Robert Lewis; and Vosburgh, Paul Noble, 3,600,857.

Amana Refrigeration Inc.: *See—*
Dymek, Theodore F.; and Neudeck, Herbert D., 3,600,905.

Ambrosius, Manfred, to Bremshey & Co. Seat for automotive vehicles. 3,601,351, Cl. 248-400.

American Chain & Cable Company, Inc.: *See—*
Rovinsky, Raymond R.; and Gardner, Harry R., Jr., 3,600,765.

American Cyanamid Company: *See—*
Hayashi, Genichi; Okubo, Tomoji; Miyamoto, Koshin; Masuda, Masatake; and Shigita, Syozo, 3,600,732.

American Enka Corporation: *See—*
Sluijters, Robert, 3,600,775.

American Lava Corporation: *See—*
Lynch, James E., 3,601,522.

American Magnesium Company: *See—*
Wheeler, Roger M., 3,601,374.

American Motors Corporation: *See—*
Scarvelis, John; and Green, Dean A., 3,600,971.

American Optical Corporation: *See—*
Ingraham, Chester S., 3,601,234.

AMP Incorporated: *See—*
De Lyon, Armand Rene; and De Bolt, Edwin Stanton, 3,601,780.
Demler, Henry William, Sr., 3,601,154.
Gillissen, Hermanus Petrus Johannes; and Teurlings, Lucas Gerardus Christinus, 3,601,782.
Lightner, Linn Stephen, 3,601,768.
Longenecker, Bruce Cameron; and Kensinger, Lex Donald, 3,601,775.
Longenecker, Bruce Cameron; and Brinser, Stanley Byron, 3,601,785.
Loose, Winfield Warren, 3,601,783.
Pauza, William Vito, 3,601,751.
Pauza, William Vito, 3,601,752.
Teagno, Wladimiro, 3,601,746.

Andersen, Poul H., to Chrysler Corporation. Circuit continuity monitoring, warning and proving device. 3,601,655, Cl. 317-9.

Anderson, Alan P., to Ford Motor Company. Compound motion transmitting cable mechanism. 3,600,966, Cl. 74-473.

Anderson, Duane H.; Meyer, Peter A.; and Byrns, Paul D., said Anderson and said meyer assors. to Comcet Incorporated. Segregation and branching circuit. 3,601,810, Cl. 340-172.5

Anderson, Gordon Campbell: *See—*
Von Kaenel, John Clifford; Anderson, Gordon Campbell; and Seymore, Stephen David, Jr.,3,600,758.

Anderson, James H.: *See—*
Johnson, John G.; and Anderson, James H.,3,601,501.

Anderson, Richard Edgar. Automatic anti-skid device. 3,601,173, Cl. 152-214.

Andrews, Guy J.: *See—*
Sullivan, Shelby F.; Whitehouse, Harper John; and Andrews, Guy J.,3,601,789.

Andrews, James M.; and Sollenberger, George H., to Sinclair-Koppers Company. Disposable food tray. 3,601,277, Cl. 220-20.

Anstett, Edgar P. Pneumatically operated nailing machine. 3,601,300, Cl. 227-8.

Aoki, Sokichi; and Murakami, Yoshinobu, to Teijin Limited. Stuffer crimper. 3,600,776, Cl. 28-1.6

Arai, Tetsuji: *See—*
Toyonaka, Toshiyuki; Goto, Akira; Ochi, Joji; Hatamoto, Katsumasa; and Arai, Tetsuji,3,601,618.

Armand, Walter R. Rubber band stretching tools. 3,600,788, Cl. 29-229.

Arndt, Lloyd G., to Buckles-Mears Company. Through hole connectors. 3,601,523, Cl. 174-68.5

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Cooper, Dexter P., Jr.; and Rak, Arthur, to Bell & Howell Company. Information replay methods and apparatus. 3,601,556, Cl. 179-100.1

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Davis, Leland J.; and Ogilvie, Paul T. Concrete-forming device. 3,600,773, Cl. 25-118.

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Du Buis, Edwin O.; and Bayer, Carl, Jr., to Mohawk Data Sciences Corporation. Tape reeling system having tape tension control. 3,601,333, Cl. 242-189.

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Dybvig, Douglas H.; Ulseth, John W.; and Wiese, Joseph A., Jr., to Minnesota Mining and Manufacturing Company. Color copying apparatus. 3,601,484, Cl. 355-4.

Dymek, Theodore F.; and Neudeck, Herbert D., to Amana Refrigeration Inc. High humidity compartment for refrigerators. 3,600,905, Cl. 62-382.

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Isreeli, Jack; Kassel, Aaron; and Heimann, Richard H., to Technicon Corporation. Method and apparatus for the introduction of auxiliary separating fluid in fluid sample analyses means. 3,600,953, Cl. 73-422.
Ito, Yoshinobu: *See—*
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Ivanchich, Peter G., to Ford Motor Company. Multiple ratio, manually controlled power transmission mechanism with energizing neutral clutch. 3,600,962, Cl. 74-331.
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Jackel, Simon S.; Rand, Kenneth R.; Letterman, Fred T.; and Diachuk, Volodymyr R., to Baker Research Development Services, Inc. Method of preparing dough. 3,601,064, Cl. 107-54.
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Schulze, Peter; and Heidepriem, Walter, 3,601,298.
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Janeschitz-Kriegel, Hermann R. K. N.; and Schijf, Johannes, to Nederladse Organisatie voor Toegepast- Natuurwetenschappelijk Onderzoek ten behoeve van Nijverheid. Pressure gauge. 3,600,949, Cl. 73-395.
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Jaspers, Hendrik Alphons; and Neelen, Gregorius Theodorus Maria, to U.S. Philips Corporation. Hot gas engine. 3,600,886, Cl. 60-24.
Jeffrey, William B.; and Reno, William H., to Westinghouse Air Brake Company. Fluid pressure regulating valve device. 3,601,148, Cl. 137-484.8
Jenny, Erich, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Arrangements for guiding cartridge belts. 3,601,001, Cl. 87-33.
Jensen, Peter L.; and Miller, Richard H., to Ford Motor Company. Breakaway rear view mirror mounting assembly. 3,601,352, Cl. 248-481.
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Johnson, Albert Henry, to National Research Development Corporation. Electronic tuning apparatus for microwave circuits. 3,601,723, Cl. 334-15.
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Johnson, John G.; and Anderson, James H. Gas compressor impeller and shaft assembly. 3,601,501, Cl. 416-244.
Johnson, Kenneth W. Adjustable vibration isolater. 3,601,345, Cl. 248-24.
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Jones, David L. Jr., to General Motors Corporation. Fluid amplifier controlled windshield washer system. 3,601,319, Cl. 239-284.
Jones, Donald. Tray support for hydraulic beauty shop chair. 3,601,443, Cl. 297-188.
Jones, John Paul, Jr.; and Peroni, Peter A., to Navcor, Inc. Printed circuit key improvement. 3,601,728, Cl. 335-205.
Jope, Edward Charles. Shaft furnaces. 3,601,377, Cl. 263-30.
Jorgensen, George N.; and Stanback, Harris I., to Square D Company. Insulated bus bar and method of making. 3,600,802, Cl. 29-624.
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Juhlin, Lawrence A., Jr., to General Electric Company. Light valve projection system employing coaxial beams of colored light. 3,601,470, Cl. 350-161.

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Justice, Raymond, to Justice Associates, Incorporated. Low loss coaxial conductor using overlapped and insulated helical wound strips. 3,601,721, Cl. 333-96.

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Kammeraad, John H., to Ko Line Tool Co. Compression tester. 3,600,941, Cl. 73-115.

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Karig, Erhardt; Dittrich, Otto; and Rattunde, Manfred, to Reimers Getriebe A.G. Infinitely variable cone pulley transmission. 3,600,960, Cl. 74-230.17

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Karr, Paul F. Portable collapsible commode. 3,600,719, Cl. 4-116.

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Kautz, Wilbert G., to Aro Corporation, The. Fluid inventory control system. 3,601,286, Cl. 222-27.

Kazmarek, Edward, to Lear Siegler, Inc. Aircraft control wheel force sensor. 3,601,733, Cl. 336-36.

Kehl, Henry. Rotary motor. 3,601,512, Cl. 418-77.

Keller, Wolfgang, to Siemens Aktiengesellschaft. Device for crucible-free or floating-zone melting a crystalline rod, especially a semiconductor rod. 3,601,569, Cl. 219-10.13

Kelley, Robert E. Dump truck-trailer combination. 3,601,447, Cl. 298-14.

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Kirchoff, Francis Donald: *See—*
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Kitai, Kiyoshi. Camera mechanism for automatic exposure by ambient or flash illumination. 3,601,019, Cl. 95-10.

Kittaka, Ziro. Artificial production of the young of coastal crustacea. 3,601,094, Cl. 119-2.

Kivela, Stanley Edward. Flashlights. 3,601,595, Cl. 240-10.6

Kleer-Vee Industries, Inc.: *See—*
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Klein, Lloyd D., to Klein, loyd D., Industrial Electronics Limited. Automatic control for grain driers. 3,600,820, Cl. 34-48.

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Kohler, Walter J., III, to Kohler General, Inc. Work feed slat conveyor for a saw. 3,601,166, Cl. 143-49.

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Kohner, Frank; and Stubbman, Albert, to Kohner Bros., Inc. Target grid for receiving conical projectiles. 3,601,402, Cl. 273-105.

Kojima, Shigeo; Nishi, Tsutomu; Ogo, Tetsunoke; and Sasaki, Tetsuo, to Nippon Kokan Kabushiki Kaisha. Flying pipe cutting apparatus. 3,600,991, Cl. 82-53.1

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Komine, Yoshio, to Canon Kabushiki Kaisha. Cine camera having film counter. 3,601,479, Cl. 352-72.

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Kopp, Erich. Device for making dental casting patterns. 3,600,752, Cl. 18-19.

Korolkov, Ivan Alexandrovich: *See—*
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Kostur, Robert E.; and Brown, Robert J., to Comet Industries Inc. Apparatus for molding articles. 3,600,746, Cl. 18-1.

Kramer, William E., to Xerox Corporation. Sheet feeding apparatus. 3,601,389, Cl. 271-18.

Kraus, Willibald, to Rheinstahl Henschel Aktiengesellschaft. Water tube boiler. 3,601,098, Cl. 122-235.

Kreitchman, Morton A., to Valcon Engineering Corporation. Electromagnetic pump. 3,601,509, Cl. 417-417.

Krinsky, Jack; and Pavitch, George. Badge press. 3,600,783, Cl. 29-200.

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Krueger, Raymond E. Dental cast articulator. 3,600,809, Cl. 32-32.

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Kubelka, Alois; and Svoboda, Frantisek, to Vyzkumny ustav pletaraky. Device for eliminating yarn slack in knitting machines. 3,601,332, Cl. 242-147.

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Kuhn, Edgar, to Bosch, Robert G.m.b.H. Voltage regulator, particularly for use with permanent magnet vehicle-type A-C generator-rectifier combination. 3,601,685, Cl. 322-28.

Kuhnt, Joachim; and Ciongwa, Joachim, to Holstein & Kappert Maschinenfabrik. Apparatus for transporting bottles or the like. 3,601,241, Cl. 198-20.

Kurt, Ewald H., to Ingersoll-Rand Company. Rock drill. 3,601,205, Cl. 173-105.

Kutcher, Howard R., to Aluminum Company of America. Pilferproof closure with vertical weakening lines. 3,601,273, Cl. 215-7.

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Kvasnicka, Frank, to Blaw-Knox Company. Apparatus for compensating for deviations in the straightness of the bed of a machine tool. 3,600,987, Cl. 82-1.

Kwik Lock Form Co.: *See—*
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La Barge, Robert Lewis; and Vosburgh, Paul Noble, to Aluminum Company of America. Insulated window assembly with movable sash. 3,600,857, Cl. 49-404.

Lacam, Guy Serge Pierre, to La Fermeture Ailee. Apparatus for treating small parts, such as sliders for sliding fasteners. 3,601,088, Cl. 118-64.

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La Martine, Francis N. Battery terminal. 3,601,784, Cl. 339-240.

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Lambert, Robert R., to Air Factors, Inc. Mounting structure for ductboard plenum chamber assembly. 3,601,032, Cl. 98-40.

Lambert, Robert R., to Air Factors, Inc. Air diffuser assembly with integral air return. 3,601,033, Cl. 98-40.

Lambiris, John; and Reimus, Richard George, to Struthers Scientific and International Corporation. Total incineration process. 3,601,070, Cl. 110-10.

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Lang, Franz; Gruen, Gustav; Schwalm, Kurt; and Juchem, Franz Josef, to Gebruder Grun KG Maschinenfabrik. Method of and apparatus for treating powdery of granular materials with gaseous, liquid or solid agents or stabilizers. 3,600,818, Cl. 34-10.

Lang, John M.; and Kubasta, Charles J., to Xerox Corporation. Sheet retaining apparatus. 3,601,394, Cl. 271-61.

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Larsson, Sven Anders. Cylindrical storage box with a lid, for diapositives in radially arranged compartments. 3,601,249, Cl. 206-1.

Laser Technique S.A.: *See—*
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Latex Products (Proprietary) Limited: *See—*
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La Violette, Rodney M. Snow shoes. 3,600,829, Cl. 36-4.5

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Layne, Max E.; and Munhausen, Theodore W., to Layne & Bowles Company, The. Welded well strainer. 3,601,192, Cl. 166-232.

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Lee, David K. K., to GTE Automatic Electric Laboratories, Incorporated. Selection of a time multiplex shared register and use of a common data buffer in a communication switching system. 3,601,546, Cl. 179-18.

Lee, Hua-Tung, to International Business Machines Corporation. Error correcting code device for parallel-serial transmissions. 3,601,800, Cl. 340-146.1

Lee, James J.: *See—*
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Lee, Ray H., to Texas Instruments, Incorporated. Process for fabricating a panel array of electromechanical light valves. 3,600,798, Cl. 29-592.

Leedy, Hayden M.; and Tolar, Neal J., to Texas Instruments, Incorporated. Titanium tungsten-gold contacts for semiconductor devices. 3,601,666, Cl. 317-234.

Leger, Asa L.; Mc Elmaney, Lee R.; and NeSmith, Jack D. Method and system for dispensing metered amounts of fluid substances from bulk containers. 3,601,285, Cl. 222-20.

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Legille, Edouard, to S.A. des Anciens Etablissements Paul Wurth. Actuators for pressure loaded valves. 3,601,357, Cl. 251-25.

Le Guennec, Rene, to Commissariat a l'Energie Atomique. Remote manipulators. 3,601,260, Cl. 214-1.

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Lender, Adam, to GTE Automatic Electric Laboratories, Incorporated. High speed data transmission system utilizing nonbinary correlative techniques. 3,601,702, Cl. 325-38.

Lennox, Thomas M., to Scanfax Systems Corporation. Counter for tape recording system. 3,601,557, Cl. 179-100.2

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Neis, Donald A., 3,601,651.

Mott, James D., to Brown Oil Tools, Inc. Well production apparatus with fluid operated valve. 3,601,190, Cl. 166-85.

Mott-Smith, Lewis M., to Mandrel Industries, Inc. System for suppressing multiple pulse in marine seismic sources by injection of additional air. 3,601,216, Cl. 181-0.5

Motter, John C., Printing Press Co.: *See—*
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Motter, John Ç., to Motter, John C., Printing Press Co. Automatic leveling system for an impression roller in a printing press. 3,601,046, Cl. 101-247.

Mower, Peter, to Trico Products Corporation. Arm and blade assembly. 3,600,739, Cl. 15-250.23

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Mueller, Frank H.; Leopold, Wilbur R., Jr.; and Smith, John J., to Mueller Co. Ball valves. 3,601,363, Cl. 251-288.

Mueller, Peter G.: *See—*
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Muller, Hendrikus Gerhardus, to N.V. Machinefabric B & S Bedrijven v.d. Woerdt. Method for shelling shrimps. 3,600,744, Cl. 17-48.

Muller, Leo Karl Markus: *See—*
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Mullin, Doyle D., to Omnetics, Inc. Miniature connector and method of making. 3,601,781, Cl. 339-192.

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Munk, Edmund; Haas, Herbert; and Weinberg, Gerd, to Furnier-und Sperrholzwerk J. F. Werz Jr., K.G. Apparatus for pressure-molding of articles from a nonflowing mixture of comminuted organic fibrous materials and a heat-setting binder. 3,600,749, Cl. 18-16.

Munroe, Robert. Oxygen furnace lining apparatus. 3,601,245, Cl. 198-101.

Murakami, Yoshinobu: *See—*
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Murer, Richard; and Leiser, Hermann, to Buser, Fritz, AG. Continuously operating thermoplastic adhesive apparatus. 3,601,299, Cl. 226-96.

Murphy, James E., Jr., to Thrall Car Manufacturing Company. Tiedown lug. 3,601,349, Cl. 248-361.

Murphy, John V., to Sperry Rand Corporation. Baseband frequency multiplexing scheme. 3,601,544, Cl. 179-15.

Murray, Jerome L. Combined nozzle and sprinkler. 3,601,316, Cl. 239-222.17

Murray, John. Vehicle passing device. 3,601,792, Cl. 340-34.

Myers, Edward B., to Honeywell Inc. Semi-balanced plug valve. 3,601,147, Cl. 137-484.2

Naccash, Edmund P. Suture removing instrument. 3,600,806, Cl. 30-294.

Nachsi, Zolman. Corn and nail cutter. 3,600,803, Cl. 30-2.

Nachtsheim, Marvin G., to National Parking Corporation. Concrete slab with improved fastening means. 3,600,863, Cl. 52-483.

Naito, Shozo: *See—*
Shimizu, Tetsuji; Naito, Shozo; and Tanaka, Hiroshi,3,601,795.

Nakagome, Yukio; and Shirai, Saburo, to Kokusai Denshin Denwa Kabushiki Kaisha. Pattern matching character recognition system. 3,601,802, Cl. 340-146.3

Nakahara, Tsuneo; and Hoshikawa, Masao, to Sumitomo Electric-Industries, Ltd. Helical waveguide with varied wall impedance zones. 3,601,720, Cl. 333-95.

Nakajima, Yasuo, to Nissan Motor Company Limited. Intake manifold vacuum control system. 3,601,106, Cl. 123-124.

Nakamura, Shigeaki: *See—*
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Nakamura, Tadao; Nakamura, Shigeaki; and Kohashi, Tadao, to Matsushita Electric Industrial Co., Ltd. Signal memory device. 3,601,610, Cl. 250-71.

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Nambu, Shuya, to Nissan Motor Company, Limited. Intake manifold for automotive fuel injection system. 3,601,108, Cl. 123-139.
Nashif, Ahid D., to University of Dayton. Resonant-beam/tuned damper. 3,601,228, Cl. 188-1.
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Nosil, Anthony W., Jr., 3,601,044.
National Gypsum Company: *See—*
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National Parking Corporation: *See—*
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Norton, David E., to International Business Machines Corporation. Gated signal processing circuits for low-level signals. 3,601,635, Cl. 307-246.
Norton, Roscoe A., Jr.; and Carrozza, William M., to Westinghouse Air Brake Company. Lead separator and mounting socket for microminiature devices. 3,601,699, Cl. 324-158.
Norton, Roscoe A., Jr.; and Carrozza, William M., to Westinghouse Air Brake Company. Lead separator for microminiature devices. 3,601,777, Cl. 339-186.
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Nourse, Jack T., to No-Mad Marine, Inc. Canoe motor mount. 3,601,344, Cl. 248-4.
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Nygard, William O. Tire pressure warning device. 3,601,080, Cl. 116-34.
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Obata, Hirokazu. Liquefied gas fueled lighters. 3,601,165, Cl. 141-302.
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Olsen, Torger Rovig. Device for fixing pallet legs to a pallet platform or direct to the bottom of a container, and also pallets with such leg fixtures. 3,601,067, Cl. 108-51.

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Olsson, Folke Lennart; Bolmen, Thure Verner; and Johansson, Karl-Erik. Shoes, particularly golf shoes, and studs therefor. 3,600,831, Cl. 36-59.

Olsson, Hans Olof Lennart, to AB Vapor. Equipment and method to facilitate the rearing of the young of spawn-producing crustaceans. 3,601,095, Cl. 119-2.

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Oravec, John J., to Federal Pacific Electric Company. Supported high voltage bus bars. 3,601,525, Cl. 174-171.

Orlita, Franz. Process and device for operating diaphragm metering pumps. 3,601,508, Cl. 417-388.

Orndorff, Roy L., Jr., to Goodrich, B. F., Company, The. Gripping device. 3,601,442, Cl. 294-99.

Ort, George F.; and Holzhauer, William T., to Esso Research and Engineering Company. Combination stockpiler reclaimer. 3,601,244, Cl. 198-36.

Oshiro, Yasuo. Combination of a router and jointer. 3,601,004, Cl. 90-12.

Ott, Anton, to Zahnradfabrik Friedrichshafen Aktiengesellschaft. Planetary-gear transmission with alternately driven sun gears. 3,600,975, Cl. 74-761.

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Otto, Melvin, to Koehring Company. Differential pressure forming mold assembly for forming plastic articles in a thermoplastic web. 3,600,753, Cl. 18-19.

Ouelette, Philip A.: *See—*
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Overbury, Francis Giles: *See—*
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Ovsienko, Walter C. Cigaret dispenser with conversion kit. 3,601,237, Cl. 194-2.

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Page, Wilbur Mills; and Coupland, Ralph, to Dewandre, Clayton Company Limited. Gear change mechanisms. 3,601,153, Cl. 137-596.2

Pagel, Armin B., to Eastman Kodak Company. Exposure adjusting system for still or motion picture cameras. 3,601,024, Cl. 95-31.

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Pauza, William Vito, to AMP Incorporated. Electrical contact. 3,601,752, Cl. 339-17.

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Perrenoud, Rene. Automatic machine for the manufacture of steel wire springs. 3,600,923, Cl. 72-129.

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Peters, Carmela. Voting game. 3,600,846, Cl. 46-47.

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Petree, Frank L. Fluid flow regulator. 3,601,124, Cl. 128-214.

Petroff, Leon. Modular framework components. 3,600,869, Cl. 52-650.

Petros, Andrew J.; and Rybar, Clement S., to Mesta Machine Company. Core removal apparatus. 3,601,262, Cl. 214-1.

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Piasecki, Frank N., to Piasecki Aircraft Corporation. Cargo hoist system for helicopters. 3,601,342, Cl. 244-137.

Pick, Eric G.; Medders, Jerry B.; and Loftus, Lawrence T., Jr., to Texas Instruments, Incorporated. Device for breaking scribed slices of semiconductor material. 3,601,296, Cl. 225-103.

Picker Corporation: *See*—
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Pierre Keller: *See*—
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Piljugin, Lev Mikhailovich; Krivonosova, Albina Demianovna; Gavriljuk, Nikolai Petrovich; and Utkov, Jury Andreevich. Working member for shaking off fruits to be used in fruit harvesters. 3,600,883, Cl. 56-330.

Piotrowski, George Peter: *See*—
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Pirat, Claude Paul Aime, to Service d'Exploitation Industrielle des Tabacs et des Allumettes. Process and device for the filling of a container with objects in the form of sticks. 3,600,873, Cl. 53-35.

Pitner, Alfred, 1/2 to Ruiel, Nadella. Steering control mechanism. 3,600,969, Cl. 74-492.

Platz, Edward F., to Ford Motor Company. Parking brake for a vehicle driveline. 3,601,230, Cl. 188-31.

Platzer, George E., Jr., to Chrysler Corporation. Automatic anti-glare rearview mirror system. 3,601,614, Cl. 250-209.

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Pollinger, Paul. Boot carrying device. 3,600,734, Cl. 12-120.5

Porter, Wellington W. Pumpkin harvester. 3,600,881, Cl. 56-327.

Portmann, August Thomas, to Saurer, Adolph, Ltd. Countershaft gear-shift transmission. 3,600,963, Cl. 74-360.

Posingies, Walter M., to Honeywell, Inc. Built in testing equipment for fluid vortex device. 3,600,930, Cl. 73-1.

Postmaster Generals, Her Majesty's: *See*—
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Potekhina, Lidia Alexandrovna; Astafiev, Georgy Vasilievich; Babkin, Svetoslav Ivanovich; and Korolkov, Ivan Alexandrovich. Surgical instrument for stitching soft tissues by means of staples. 3,601,302, Cl. 227-120.

Potter, Frank J., to Stromberg-Carlson Corporation. Cross-point switching arrangements including triggerable avalanche devices. 3,601,547, Cl. 179-18.

Potter, Frank. File apparatus having movable racks as supports for binders. 3,601,257, Cl. 211-162.

Poupitch, Ougljesa Jules, to Illinois Tool Works Inc. Container packaging device and method. 3,601,253, Cl. 206-65.

Poupitch, Ougljesa Jules, to Illinois Tool Works, Inc. Container packaging device. 3,601,439, Cl. 294-87.2

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PPG Industries, Inc.: *See*—
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Prall, Ralph J.; and Olsen, Georg, to Singer-General Precision, Inc. Brush block retractor and alignment device. 3,601,747, Cl. 339-5.

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Preston, Frank S., to United Aircraft Corporation. Inverse tangent generator. 3,601,593, Cl. 235-179.

Preston, Larry T. Magnetic computer tape reel. 3,601,336, Cl. 242-197.

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Progressive Products Corporation: *See*—
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Propst, Richard F.; and Neagle, Norman M., to General Electric Company. Spring-loaded hotstick for manipulating electric cable connectors. 3,600,784, Cl. 29-203.

Puerta, Miguel A. Cushioned base rubber stamp mounts. 3,601,050, Cl. 101-368.

Pusey, Eugene H. Swimming pool cover. 3,600,721, Cl. 4-172.12

Pyatkina, Ljubov Petrovna: *See*—
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Rand, Kenneth R.: *See*—
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Randall, Donald Sexton, to Physics International Company. Optical tunnel high-speed camera system. 3,601,480, Cl. 352-84.

Randall, Dwight L.; Campbell, William W., Jr.; and Harris, Franklin H., to United States of America, Navy. Absolute humidiometer. 3,601,608, Cl. 250-435.

Randmere, Uno: *See*—
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Rao, Vemulapalli Durganageswar; Trudeau, John J.; and White, Jerry E., to Ford Motor Company. Rim construction for gas turbine rotating heat exchangers. 3,601,182, Cl. 165-9.

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Raschke, Herbert A.; and Moretti, Anthony L., to Bullard, E. D., Company. Air distribution plenum with silencer for head enclosures. 3,601,219, Cl. 181-36.

Ratliff, Harvey L., Jr., to Jetsu Inc. Distortion-free panoramic viewer and picture therefor. 3,601,475, Cl. 350-239.

Rattunde, Manfred; and Dittrich, Otto, to Reimers Getriebe A.G. Infinitely variable cone pulley transmission. 3,600,961, Cl. 74-230.17

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Raycon Corporation: *See*—
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Redfern, Calvin E., to Allis-Chalmers Manufacturing Company. Two-piece piston. 3,601,014, Cl. 92-59.

Redwine, Donald J., to Texas Instruments, Incorporated. MOS circuit with bipolar emitter-follower output. 3,601,630, Cl. 307-205.

Redwine, Donald J.; and Worstell, Earl M., Jr., to Texas Instruments, Incorporated. Mosic with protection against voltage surges. 3,601,625, Cl. 307-202.

Redwine, Donald J.; and Worstell, Earl M., Jr., to Texas Instruments, Incorporated. Precharge MOS-bipolar output buffer. 3,601,628, Cl. 307-205.

Reede, Jan, to Stork Amsterdam N.V. Method for discharging containers, packed with commodities like foodstuffs, from a continuously advancing endless conveyor and a device for performing this method. 3,601,254, Cl. 209-71.

Reeve, James Jackson. Anterior root torquing auxiliary wire. 3,600,808, Cl. 32-14.

Reggio, Eugene T. Bit for smoking article having smoke and air passages. 3,601,131, Cl. 131-198.

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Reynolds, Walker, Jr. Stethoscope. 3,601,218, Cl. 181-24.

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Richardson, David A., to Foxboro Company, The. Multiple-controller system with improved automatic-to-manual transfer means. 3,601,711, Cl. 330-1.

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Ringstad, Ralph H., to Automatic Switch Co. Automatic synchronizing monitor for parallel connection of two separate alternating current sources. 3,601,619, Cl. 307-87.

Ripart, Guy, to Compagnie Generale d'Electricite. Apparatus for checking the proper operation of a laser telemeter. 3,601,488, Cl. 356-6.

Ris, Jurg M. Device for the improvement of the directional guidance of skis. 3,601,421, Cl. 280-1.37

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Ritchie, Edwin E. Proximity control apparatus. 3,601,621, Cl. 307-116.

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Robinson, Lafayette A. Educational question and answer card reading apparatus. 3,600,824, Cl. 35-9.

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Rohrbacher, Earl W.; and Elfes, Donald B., to General Motors Corporation. Fuel evaporative loss control system with accumulator. 3,601,107, Cl. 123-136.

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Palfreyman, Jack; and Middleton, Henry Edward, 3,601,500.
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Romanzi, Louis, Jr.; and Eubank William J., to Irvin Industries, Inc. Integral three point safety buckle. 3,600,768, Cl. 24-205.17

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Rosenthal, Claude Roland Julius,, to Pierre Keller. Rocking head for portable lighting devices such as lighters operating on pressurized liquefied gas. 3,601,517, Cl. 431-254.

Ross, Abe D. Mixer dispenser. 3,601,371, Cl. 259-5.

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Rothman, Edward A., to United Aircraft Corporation. Heat exchanger construction. 3,601,185, Cl. 165-166.

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Rotvand, Georges. Process and device for producing extinguishing foam. 3,601,199, Cl. 169-15.

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Rovinsky, Raymond R.; and Gardner, Harry R., Jr., to American Chain & Cable Company, Inc. Rope end coupling. 3,600,765, Cl. 24-122.6

Rozmus, Walter J., to Utica Tool Company, Inc. Method and apparatus for manufacturing plier- like tools. 3,600,979, Cl. 76-101.

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Ruettener, Erwin; and Sutter, Fritz, to Buss AG. Continuously operating mixing and kneading machine. 3,601,370, Cl. 259-5.

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Rutherford, Dwayne C. Ventilating and temperature control system. 3,601,096, Cl. 119-15.

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Saltiel, Joseph Pepo, to Wimbledon Organization Ltd. Undergarment provided with elastic fixing means of adjustable length. 3,601,130, Cl. 128-535.

Sampietro, Achille C.; and Hoyt, Kenneth L., to Ford Motor Company. Rear suspension system for a motor vehicle. 3,601,425, Cl. 280-124.

Samuels, Ronald L.; and Friederichs, Josef E., to TRW Inc. Linear variable electrical transducer. 3,601,732, Cl. 336-30.

Sandra Manufacturing Co., Inc.: *See—*
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Sandri, Alfred; Scherleitner, Anton; Ivessa, Stefan; and Nutz, Karl, to Waagner-Biro Aktiengesellschaft. Method and apparatus for avoiding of evaporation. 3,601,382, Cl. 266-32.

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Sargent, Mary J.Retractable guard for infant's table. 3,601,065, Cl. 108-27.

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Satomi, Toyokazu, to Kabushiki Kaishi Ricoh. Developing device for wet process electrophotography. 3,601,092, Cl. 118-637.

Saucier, Richard. Retractable ladder. 3,601,220, Cl. 182-84.

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Scaramucci, Domer. Disc valve assembly with replaceable disc and seats. 3,601,359, Cl. 251-148.

Scaramucci, Domer. Disc valve assembly with tilt in valve member. 3,601,360, Cl. 251-304.

Scaramucci, Domer. Disc valve assembly with insertable valve member and seats. 3,601,364, Cl. 251-306.

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Schlaf, Stanley O. Vending machine with screw conveyor type cellular magazine. 3,601,281, Cl. 221-75.

Schlafli, Hans; and Gugger, Gottfried, to Laser Technique S.A. Method for boring workpieces by laser pulses. 3,601,576, Cl. 219-121.

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Schmidt, Werner, to Rheinische Braunkohlenwerke AG. Method of and apparatus for effecting severance of webs in response to changes in transparency along their length. 3,600,997, Cl. 83-364.

Schmitz, Vincent O. Plow colter. 3,601,201, Cl. 172-269.

Schneider, Albert, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Rocket launcher. 3,601,000, Cl. 89-1.801

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Schover, Donald S., to General American Transportation Corporation. Sludge dewatering apparatus. 3,601,039, Cl. 100-118.

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Schuster, Nick A., to Schlumberger Technology Corporation. Electrical logging system utilizing impedance means between servo and measure electrodes. 3,601,692, Cl. 324-10.

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Schwaner, Jon M., to Inand Container Corporation. Container for maine motor. 3,601,251, Cl. 206-46.

Schwartzman, Gilbert. Applicator for heated fluids. 3,601,287, Cl. 222-146.

Schwarz, Ludwig, to Gebr. Bohler & Co. Aktiengesellschaft. Device for the explosive forming of workpieces. 3,600,921, Cl. 72-56.

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Schwerin, Gunther, to Bosch, Robert, G.m.b.H. Fluid pressure transmitting control assembly. 3,601,006, Cl. 91-1.

Sciascia, Peter D.; and Chin, Sing C. Spring driven tool. 3,601,170, Cl. 145-66.

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Selzer, Manfred, to Eichner Organisation GmbH. Arrangement for generating the complement of a number. 3,601,704, Cl. 328-46.

Senter, Louis; and Johnson, Robert E., to Whittaker Corporation. Attachment for changing rearend suspension in automobiles. 3,601,385, Cl. 267-48.

Sepe, Manlio O., to Wagner Electric Corporation. Time delay bimetallic relay. 3,601,736, Cl. 337-101.

Serpette, Jean-Pierre; and Peroy, Francois, to Regie National des Usines Renault, and Automobiles Peugeot. Shock sensitive safety cutout device for automotive vehicles. 3,601,563, Cl. 200-61.5

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Ziemba, Francis P.; Moross, John R.; and Katzenstein, Henry S., to Solid State Radiators, Inc. Liquid level sensor. 3,600,946, Cl. 73-295.

Zimic, Richard,: *See—*
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Zwennis, Hendrik Pieter. Joints between structural members. 3,601,430, Cl. 287-54.

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American Optical Corp.: *See*—
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Shindler, Anthony. 221,593.

American Standard Inc.: *See*—
Young, Raymond Wallace. 221,549.

Anson, Arthur H. Drink-refill signalling bell. 221,600, 8–24–71, Cl. D72—1.

Ashton, Robert, and W. Hirsch, to Massey-Ferguson Industries Ltd. Combine harvester. 221,572, 8–24–71. Cl. D40—1.

Ashton, Robert, and W. Hirsch, to Massey-Ferguson Industries Ltd. Self-propelled combine. 221,573, 8–24–71, Cl. D40—1.

Aslan, Edward E., to The Narda Microwave Corp. High frequency probe. 221,587, 8–24–71, Cl. D52—6.

Aslan, Edward E., to The Narda Microwave Corp. High frequency probe. 221,588, 8–24–71, Cl. D52—6.

Baker, James W., to Hunter Structures, Inc. Car wash structure. 221,527, 8–24–71, Cl. D13—1.

Baker, James W., to Hunter Structures, Inc. Car wash structure. 221,528, 8–24–71, Cl. D13—1.

Bauermann & Soehne G.m.b.H.: *See*—
Zimmermann, Richard. 221,606.

Betka, Harold A., to Abbott Laboratories. Jug. 221,515, 8–24–71, Cl. D9—40.

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Black and Decker Mfg. Co., The: *See*—
Bunyea, Roderick F. 221,507.
Bunyea, Roderick F. 221,574.

Bourgeois, Edward G., to A. G. Spalding & Bros., Inc. Golf club head cover. 221,563, 8–24–71, Cl. D34—5.

Boutell, Kenneth M.: *See*—
Larsen, Charles A., Mousseau, and Boutel. 221,590.

Brittig, David P., to Rixson Inc. Font of type. 221,596, 8–24–71, Cl. D64—12.

Brown, Robert P., to Poloron Products, Inc. Ice chest. 221,599, 8–24–71, Cl. D67—4.

Browning, Lyle M. Squad car equipment console or similar article. 221,533, 8–24–71, Cl. D14—6.

Bunyea, Roderick F., to The Black and Decker Mfg. Co. Electric grass trimmer. 221,507, 8–24–71, Cl. D8—8.

Bunyea, Roderick F., to The Black and Decker Mfg. Co. Motor shroud for lawn mower. 221,574, 8–24–71, Cl. D40—1.

Chapdelaine, Normand L. Automobile lug wrench. 221,508, 8–24–71, Cl. D8—26.

Christensen, Arthur C., and M. L. Levin, to Scovill Mfg. Co. Kitchen mixer. 221,575, 8–24–71, Cl. D44—1.

Cannon Mills Co.: *See*—
Clementi, Leonard C. 221,607.

Clementi, Leonard C., to Cannon Mills Co. Towel or similar article. 221,607, 8–24–71, Cl. D92—26.

Cook, Calvin S., and R. J. Lohr, to Louis Marx & Co., Inc. Toy vehicle. 221,567, 8–24–71, Cl. D34—15.

Cooper, Dale E. Portable cement mixer. 221,591, 8–24–71, Cl. D55—1.

Cowan, Murray L. Expansible link chain for a bracelet or similar article. 221,581, 8–24–71, Cl. D45—4.

Cox, Roger F.: *See*—
Figlin, Murray S., and Cox. 221,553.

Crabtree, Kenneth L., to Keyes Fibre Co. Packaging tray. 221,521, 8–24–71, Cl. D9—219.

Crisci, Harry. Jug or similar article. 221,516, 8–24–71. Cl. D9—40.

Dapol Plastics Inc.: *See*—
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Dart Industries Inc.: *See*—
Mason, Jimmie L., and Tracy. 221,523.

Davey, John C., H. G. Dickie, A. H. Metcalfe, and L. J. Rigbey. Container for magnetic recording disc. 221,605, 8–24–71, Cl. D87—1.

Delamater, William B. Combination water nozzle and spray head. 221,548, 8–24–71, Cl. D23—34.

Dickie, Hugh G.: *See*—
Davey, John C., Dickie, Metcalfe, and Rigbey. 221,605.

Dison, Richard H. Steam/air finishing cabinet. 221,586, 8–24–71, Cl. D49—1.

Dixon, Don P. Combined outlet and control panel for an automobile air-conditioner. 221,550, 8–24–71, Cl. D23—142.

Dixon, Don P. Combined outlet and control panel for an automobile air-conditioner. 221,551, 8–24–71, Cl. D23—142.

Donato, Anthony C., to Lightolier Incorporated. Post-mounted luminaire. 221,583, 8–24–71, Cl. D48—31.

Dufault, Leonard M. Combination cord and rope winder. 221,511, 8–24–71, Cl. D8—220.

Dunbar, George W., to Kusan, Inc. Riding toy. 221,565, 8–24–71, Cl. D34—15.

Eggert, Walter S., Jr. Passenger transfer vehicle. 221,597, 8–24–71, Cl. D66—1.

Esquire, Inc.: *See*—
Moore, Buell. 221,585.

Fedtro, Inc.: *See*—
Kahn, Robert D. 221,554.

Field, Allen I. and S. P. Bag carrying handle. 221,524, 8–24–71, Cl. D9—292.

Field, Sidney P.: *See*—
Field, Allen I. and S. P. 221,524.

Figlin, Murray S., and R. F. Cox. Extruded panel for musical and other instruments. 221,553, 8–24–71, Cl. D26—14.

Fisher, Morris F. Chair. 221,541, 8–24–71, Cl. D15—1.

Fisher, Morris F. Chair. 221,542, 8–24–71, Cl. D15—1.

Fisher, Walter, to Fox Ledge Corp. Building. 221,526, 8–24–71, Cl. D13—1.

Fontaine, Raymond C. Expansible link chain for a bracelet or similar article. 221,582, 8–24–71, Cl. D45—4.

Fox Ledge Corp.: *See*—
Fisher, Walter. 221,526.

Freer, Edgar P., to Hubach-Freer Corp. Height gage. 221,589, 8–24–71, Cl. D52—6.

Frifogle, LaVerne. Dog toy. 221,559, 8–24–71, Cl. D30—42.

GAF Corp.: *See*—
Madson, John Stanley. 221,545.

Gilford, Ira, to Tonka Corp. Toy truck cab. 221,566, 8–24–71, Cl. D34—15.

Goodyear Aerospace Corp.: *See*—
Meller, Oscar W., Moffitt, Morse, and Sprick. 221,522.

Gorton Machine Corp.: *See*—
Larsen, Charles A., Mousseau, and Boutell. 221,590.

Happe, Karl G. T. Tip-up for ice fishing. 221,546, 8–24–71, Cl. D22—22.

Hirsch, Walter: *See*—
Ashton, Robert, and Hirsch. 221,572.
Ashton, Robert, and Hirsch. 221,573.

Hodge, Lynn H. Stationary car-top mirror. 221,534, 8–24–71, Cl. D14—6.

Hodge, Lynn H. Periscope type rear view mirror. 221,536, 8–24–71, Cl. D14—6.

Hodge, Lynn H. Periscope type rear view mirror. 221,537, 8–24–71, Cl. D14—6.

Hodge, Lynn H. Periscope-type rear view mirror. 221,538, 8–24–71, Cl. D14—6.

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Hodge, Lynn H. Periscope-type rear view mirror. 221,540, 8–24–71, Cl. D14—6.

Hough, Harold L.: *See*—
Wierzbicki, Julian J. 221,584.

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Hyatt, Frederick, to Bevis Industries, Inc. Base support unit for a tentering machine. 221,608, 8–24–71, Cl. D92—15.

Jamieson, John, to Peripheral Technology, Inc. Online/offline computer output microfilmer. 221,594, 8–24–71, Cl. D61—1.

Jamieson, John, to Peripheral Technology, Inc. Online/offline computer output microfilmer. 221,595, 8–24–71, Cl. D61—1.

Johnson, S. C., & Son, Inc.: *See*—
Luedtke, Warren J. 221,517.

Jordan, John H., Jr. Room divider. 221,560, 8–24–71, Cl. D33—1.

Jordan, John H., Jr. Console. 221,562, 8–24–71. Cl. D33—19.

Kahn, Robert D., to Fedtro, Inc. Television antenna. 221,554, 8–24–71, Cl. D26—14.

Kellogg Brush Mfg. Co.: *See*—
O'Neil, Robert A. 221,506.

Keyes Fibre Co.: *See*—
Crabtree, Kenneth L. 221,521.

Kieves, Raymond. Multiple purpose spray gun. 221,547, 8–24–71, Cl. D23—17.

Kimmel, Irvine. Extruded straight eave connector member. 221,529, 8–24–71, Cl. D13—1.

Kimmel, Irvine. Extruded corner trim member. 221,530, 8–24–71, Cl. D13—1.

Kimmel, Irvine. Extruded tapered eave connector member. 221,531, 8–24–71, Cl. D13—1.

Knomark Inc.: *See*—
Neis, Arnold H. 221,602.

Krause, Daniel F., to Kusan, Inc. Riding toy. 221,568, 8–24–71, Cl. D34—15.

Krause, Daniel F., to Kusan, Inc. Riding toy. 221,569, 8–24–71, Cl. D34—15.

Krolopp, Rudolph W., to Motorola, Inc. Two-way radio or similar article. 221,555, 8–24–71, Cl. D26—14.

Kusan, Inc.: *See*—
Dunbar, George W. 221,565.
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Larsen, Charles A., D. J. Mousseau, and K. M. Boutell, to Gorton Machine Corp. Machining center. 221,590, 8–24–71, Cl. D54—14.

Lassen, George W. Shower step stool. 221,543, 8–24–71, Cl. D15—8.

Leary, Donald J., and D. J. Morgan, to Owens-Illinois, Inc. Jug. 221,513, 8–24–71, Cl. D9—39.

Leary, Donald J., and D. J. Morgan, to Owens-Illinois, Inc. Jug. 221,514, 8–24–71, Cl. D9—39.

Leland, Malcolm. Door pull. 221,509, 8-24-71, Cl. D8—171.
Levin, Monte L.: *See*—
Christensen, Arthur C., and Levin. 221,575.
Levin, Monte L., to Scovill Mfg. Co. Heater housing for hair curlers. 221,603, 8-24-71, Cl. D86—10.
Lightoller Inc.: *See*—
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Cook, Calvin S., and Lohr. 221,567.
Luedtke, Warren J., to S. C. Johnson & Son, Inc. Bottle. 221,517, 8-24-71, Cl. D9—42.
MacLaren, David S. Sewage treatment plant. 221,525, 8-24-71, Cl. D13—1.
Madson, John S., to GAF Corp. Floor tile or similar article. 221,545, 8-24-71, Cl. D18—2.
Maiese, Richard R., and H. F. Whiting, to American Optical Corp. Spectacle temples. 221,592, 8-24-71, Cl. D57—1.
Markarian, Varkis A. Paperweight. 221,601, 8-24-71, Cl. D74—12.
Marx, Louis, & Co., Inc.: *See*—
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Mason, Jimmie L., and H. C. Tracy, Jr., to Dart Industries Inc. Dispenser cap for a pressurized container. 221,523, 8-24-71, Cl. D9—258.
Massey-Ferguson Industries Ltd.: *See*—
Ashton, Robert, and Hirsch. 221,572.
Ashton, Robert, and Hirsch. 221,573.
McGlory, Donald H. Pipette rack. 221,544, 8-24-71, Cl. D16—1.
Meller, Oscar W., E. F. Moffitt, F. G. Morse, and W. F. Sprick, to Goodyear Aerospace Corp. Shipping container. 221,522, 8-24-71, Cl. D9—246.
Metcalfe, Albert H.: *See*—
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Moffitt, Edsel F.: *See*—
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Moore, Buell, to Esquire, Inc. Light fixture. 221,585, 8-24-71, Cl. D48—31.
Morse, Frank C.: *See*—
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Nels, Arnold H., to Knomark Inc. Shoe polish kit. 221,602, 8-24-71, Cl. D86—11.
Norman, Timothy H., to Spafax (1965) Ltd. Wind screen wiper blade holder. 221,535, 8-24-71, Cl. D14—6.
O'Nell, Robert A., to Kellogg Brush Mfg. Co. Combined toilet brush and holder. 221,506, 8-24-71, Cl. D4—9.
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Pfeilsticker, Lee J., to Tonka Corp. Toy backhoe body. 221,564, 8-24-71, Cl. D34—15.
Plummer, James E., to Owens-Illinois, Inc. Jug. 221,519, 8-24-71, Cl. D9—48.
Plummer, James E., to Owens-Illinois, Inc. Combined bottle and overcap therefor. 221,520, 8-24-71, Cl. D9—130.
Poloron Products, Inc.: *See*—
Brown, Robert P. 221,599.
Poon, Yuen S. Watch bracelet or similar article. 221,579, 8-24-71, Cl. D45—4.
Poon, Yuen S. Watch bracelet or similar article. 221,580, 8-24-71, Cl. D45—4.
Ramboldt, Florene J. Cake pan or the like. 221,576, 8-24-71, Cl. D44—1.
Ramboldt, Florene J. Cake pan or the like. 221,577, 8-24-71, Cl. D44—1.
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Reaves, Ransom. Magazine rack. 221,561, 8-24-71. Cl. D33—2.
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Rodolakis, Michael, to Dapol Plastics Inc. Plastic carrying tray. 221,604, 8-24-71, Cl. D87—1.
Sain, Bernard S. Combined motor vehicle and adjustable loading platform. 221,532, 8-24-71, Cl. D14—3.
Schindler, Anthony, to American Optical Corp. Spectacles. 221,593, 8-24-71, Cl. D57—1.
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Wallace, Elizabeth. Religious ornament. 221,556, 8-24-71, Cl. D29—23.
Wallace, George M. Religious ornament. 221,557, 8-24-71, Cl. D29—23.
Weckman, Richard L., to Owens-Illinois, Inc. Jug. 221,518, 8-24-71, Cl. D9—43.
Weller, Robert W. Clip for typewriter ribbon spools. 221,512, 8-24-71, Cl. D8—259.
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Young, Raymond W., to American Standard Inc. Bathtub wall unit. 221,549, 8-24-71, Cl. D23—49.
Zecca, Giuseppe. Combined covering plate and switches for electrical stations, electrical panels and the like. 221,510, 8-24-71, Cl. D8—181.
Zecca, Giuseppe. Circuit breaker or the like. 221,552, 8-24-71, Cl. D26—13.
Zimmerman, Robert O. Animal bed. 221,558, 8-24-71, Cl. D30—41.
Zimmermann, Richard, to Bauermann & Soehne G.m.b.H. Umbrella sheath. 221,606. 8-24-71. Cl. D87—1.

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